

CHAPTER 49. ISSUE A CERTIFICATE OF WAIVER OR AUTHORIZATION FOR AN AVIATION EVENT

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODE.

- Issue Certificate of Authorization: 1220
- Issue Certificate of Waiver: 1230
- Complete DOD Form 2535: 1231

2. OBJECTIVE. The objective of this task is to determine whether to issue a Certificate of Waiver or Authorization, FAA Form 7711-1, to an applicant for an aviation event. Completion of this task results in the issuance of a Certificate of Waiver or Authorization or the disapproval of an Application for Certificate of Waiver or Authorization.

NOTE: As per volume 1, chapter 1, section 2, paragraph 3, no regional supplements to aviation event policy are permitted.

3. GENERAL.

A. Definitions. Many terms used in this chapter are not used elsewhere; therefore, their definitions are provided below.

(1) Aerobatic Flight. For airshow purposes when the event is conducted in accordance with a Certificate of Waiver or Authorization, the definition contained in Title 14 of the Code of Federal Regulations (14 CFR) part 91 § 91.303 does not apply. Therefore, the portion of § 91.303 that defines aerobatic flight must always be waived. The following guidelines apply in determining what maneuvers are considered aerobatic.

(a) An intentional maneuver in which the aircraft is in sustained inverted flight, or is rolled from upright to inverted or from inverted to upright is considered aerobatic flight.

(b) The following aircraft attitudes will be considered aerobatic flight:

i. For civil turbojet/turbofan powered (primary power unit) airplanes, when the pitch angle exceeds a positive or negative 60° angle from the horizon, and/or when the bank angle diverges from level flight in excess of 60°.

ii. For all other aircraft, when the pitch angle exceeds a positive or negative 90° angle from the horizon, and/or when the bank diverges from level flight in excess of 90°.

(c) All standard airshow aerobatic maneuvers such as slow rolls, snap rolls, loops, Immelmans, cuban eights, spins, hammerhead turns, etc., are considered aerobatic flight and may not be performed over congested areas or over spectators, or between the spectator area and appropriate show line.

(d) Steeply banked (90° or less), level, climbing, or descending turns made at the end of the aerobatic area for the purposes of remaining in or returning to show center are not considered to be aerobatic flight.

(e) Positioning turns for high performance aircraft operated by the U.S. Air Force Thunderbirds, U.S. Navy Blue Angels, Canadian Defense Forces Snowbirds, and aircraft of other North American Military Units who possess an Federal Aviation Administration (FAA) accepted maneuver package regardless of the angle of bank or pitch attitude, are not considered to be airshow aerobatic maneuvers.

(f) Maneuvers such as steep turns in air racing are not considered aerobatic flight.

(2) Formation Flying. Formation flying is an aircraft maneuvering with reference to another aircraft or skydiver rather than the horizon, flight lines, etc. Air racing, simulated dogfighting, and multiple rotorcraft operations with more than 2 rotor disk separation are not formation flying.

(3) Approved Maneuver. An approved maneuver is a maneuver or a series of maneuvers that may include overflight of the designated spectator area(s) below 1,000 feet above ground level (AGL), or a maneuver that may involve energy directed at the spectator area. The U.S. Armed Forces aerial demonstration teams, the Blue Angels or Thunderbirds, and Canadian Defense Forces Snowbirds, present a maneuvers package approved by their respective military command to the General Aviation and Commercial Division, AFS-800, for acceptance each year. Civil and/or foreign military teams, flights, or individual acts must submit sufficient information about a single maneuver or series of maneu-

vers to AFS-800 for approval to conduct these types of maneuvers. Performers who do not conduct these types of maneuvers do not need a maneuvers package. This policy does not apply to closed course air racing.

(a) Aerobatic maneuvers having a descending recovery with a pull or push and having a flight path which, when extended, would contact the primary spectator area, will not be approved and cannot be performed by civil or foreign military performers at public aviation events.

(b) Maneuvers such as hammerhead turns, spins, inverted flat spins, or those maneuvers in which the aircraft is recovering from a tail slide, torque roll, lomcevak, or other similar maneuvers in which the aircraft, but not the energy vector, momentarily may be pointed in the direction of the primary spectator area do not need FAA approval. Also, basic, nonaerobatic (as defined above in paragraph 3A(1)(c)) positioning and/or clearing turns for the purposes of remaining in or returning to show center do not require FAA approval.

(c) Other maneuvers such as the switch blade, 360° turns with an aerobatic component or “outside” 360° turns, or a series of maneuvers that direct an energy vector toward the primary spectator area, and nonaerobatic flight over the primary spectator area at less than 1,000 feet AGL, must be approved by the National Airshow Coordinator in the General Aviation and Commercial Division in Washington headquarters. FAA approval for these maneuvers will be issued to a specific airshow performer and/or airshow performing team for specific maneuvers and for a specified duration not to exceed 24 calendar-months.

(4) *Authorization.* An authorization is an official document issued by the FAA to allow activities as provided by the regulations.

(5) *Aviation Event.* Aviation events include air shows, closed course air races, aerobatic contests, certain parachute demonstration jumps, and balloon meets and competitions. Most events are held at, or immediately adjacent to, an airport. An increasing number, however, are held offshore (within gliding distance of land), in the vicinity of a state fairground, or at other off-airport locations. Aerobatic school activities, use of aerobatic practice areas, or aerobatic meets will occur that are not air shows or races; however, a waiver must be issued. At these school activities or meets, which are not advertised as air shows, it may not be necessary to provide public airshow policing and emergency facilities. Participants at such events are not required to hold a Statement of Acrobatic Competency. (See volume 2, chapter 48.)

(6) *Critical Aircraft/Critical Wingman.* The critical aircraft or critical wingman is that aircraft closest to a spectator area.

(7) *Crowd Line.* A crowd line is a physical barrier or a line marked on the ground that serves as a restraining line. The crowd line is placed at a specified distance from the show line. The restraining line and any necessary policing must prevent spectators or other nonparticipating persons from getting too close to the show line.

(8) *Control Point.* A control point is a specified location where the show sponsor, a designated representative, or a safety director manages the aviation event. The communications system with the capability necessary to control the aviation event must also be located at this site.

(9) *Event Flight Crewmember.* A balloon event flight crewmember is a participant, other than the pilot, who will be carried on board the balloon during the competition flight event. Balloon event crewmembers are differentiated from ground support launch and recovery crewmembers.

(10) *Head-on Area.* A head-on area is an arc of the courses toward the crowd from which debris of an aircraft experiencing catastrophic breakup or loss of control at a given altitude and distance from the crowd could impact persons in the crowd.

(11) *Inspector-in-Charge (IIC).* The FAA IIC is the aviation safety inspector (ASI) who conducts the feasibility study, participates in the preseason evaluation meeting, evaluates the application for waiver or authorization, recommends issuance or denial, and conducts the surveillance of the aviation event. (See volume 2, chapter 50.)

(12) *Markers.* The markers used in balloon competition tasks for dropping or marking targets are small flour bags, each having a maximum weight of 3 ounces and a fabric tail 4 inches wide and 6 feet long. The international standard for markers is 100 grams maximum weight with a tail 10 centimeters wide and 2 meters long. Markers conforming to these specifications should not injure persons or damage property.

(13) *Primary Spectator Area.* The primary spectator area is the main area designated by the sponsor for spectator use. It is bounded by the crowd line and has lateral limits (ends) that are well defined. This is the area where the public is generally expected to view the airshow. There may be more than one primary spectator area.

(14) *Secondary Spectator Area.* The secondary spectator area may be any other area where persons have a natural tendency to gather to observe the event. This is generally an area opposite the show line from the primary spectator area or an adjacent road. Secondary spectator areas should be identified by the show sponsor and the IIC before the aviation event begins. These are also areas where it may not be completely possible to control the presence of people. However, the show sponsor shall make every effort to prohibit secondary spectator areas. Secondary spectator areas can not be under the aerobatic maneuver area.

(15) *Show Center.* The show center is a visible reference point along the show line usually denoting the center of the aerobatic area.

(16) *Show line.* The show line is a readily visible reference that provides the required distance from the spectators and enhances pilot orientation along the show line during the performance (figure 49-1). The show line also serves as the longitudinal axis for the show. Small rivers, roads, and runways all make excellent natural show lines. Snow fences spread flat on the ground may also make acceptable references, depending on the visual contrast. Lines of parked buses, cars, or boats, although less desirable, may be the only alternatives when natural show lines are not available. Special attention must be given to delineating show lines properly for high performance jet aircraft.

(a) To enhance safety, the show line may be moved toward or away from the spectator area to give the performer a more identifiable reference. However, the show line shall not be moved closer to the primary spectator area than the distance specified. (See paragraph 14.)

(b) The 500-foot show line represents the minimum horizontal distance that is authorized under § 91.119(c). This is NEVER waived with regard to any spectator area. Routines that involve several aircraft in formation or nonaerobatic flybys must ensure that the critical aircraft or critical wingman does not operate closer to the spectators than 500 feet. This may require the formation leader to adjust his/her flight path away from the spectator area. (See paragraph 14.)

(c) The show line shall be the line used by a performer or a formation leader to set up and recover from an aerobatic maneuver. In the case of aircraft formations, performers must adjust their positions to ensure that the critical aircraft is not closer than 500 feet from a spectator area.

(17) *Show Season.* A show season generally runs from March through October of a given year.

Geographic and climatological circumstances can lengthen or shorten the show season.

(18) *Waiver.* A waiver is an official document issued by the FAA that authorizes certain operations of aircraft in deviation from a regulation but under conditions ensuring an equivalent level of safety. The sections of part 91 that can be waived are listed in § 91.905.

B. Regulatory Authority. Issuing waivers of the regulations contained in part 91 is the responsibility of the Air Traffic Service. However, the authority to grant or deny waivers of the regulations listed in § 91.905 for aviation events has been delegated to Flight Standards. Requests for waivers or authorizations are processed at a Flight Standards District Office (FSDO) where the IIC has on-the-scene knowledge of the proposed operation and show site.

C. Scope of Waivers. Waivers vary depending upon the rules that an applicant requests to be waived.

(1) Some events require nothing more than waiving § 91.303(e) to permit aerobatic flight at less than 1,500 feet above the surface. Others may require waiving aircraft speed limitations, minimum safe altitudes, or limitations while operating in the vicinity of airports or within Class B, C, D, or E airspace. All waivers for air shows with aerobatic performances must waive the portion of § 91.303 that defines aerobatic flight.

(2) Appropriate parts of §§ 91.107, 91.117, 91.119, 91.127, 91.129, 91.131, 91.303, and 91.515(a)(1) may need to be waived, depending upon the location and complexity of the airshow.

(3) Waivers of the basic visual flight rules (VFR) weather minimums specified in § 91.155 may be considered only in areas where the entire event can be conducted with air traffic control (ATC) providing separation between participating aircraft and nonparticipating aircraft.

D. Wing Walking and Trapeze Acts. Wing walking acts may be approved when the performers have safely demonstrated the act in an aerobatic competency evaluation. Section 91.107(a)(2) and (3) may need to be waived for stunt persons only. All performances of helicopter trapeze acts must comply with the applicable requirements of 14 CFR part 133 concerning rotorcraft external load combination Class B or D operations. Wing walking acts using ultralights are not authorized. Overflight of the designated spectator areas for these acts shall be avoided.

E. Regulations that May or May not be Waived.

(1) Section 91.119(a) shall not be waived for aerial demonstration purposes. Section 91.119(b) and (c) may be waived only when the conditions stated herein are met.

(2) A waiver of § 91.119(b) and (c) is issued for aerial demonstrations by the U.S. Air Force Thunderbirds, the U.S. Navy Blue Angels, and the Canadian Defense Forces Snowbirds, as appropriate, to transition from egress routes and to ingress routes, and to fly as low as 200 feet above the highest obstacle on egress/ingress routes within 3 nautical miles (NM) of show center, as requested by the appropriate military command and approved by the local FSDO. These performers or teams have command-approved maneuvers packages that are accepted by the FAA. The maneuvers packages describe the normal routines. The packages do not approve airshow aerobatic maneuvers over congested areas, over persons, or over the primary or secondary spectator areas.

(3) A waiver may be issued to allow performers, other than those covered in paragraph 3E(2) above, to, as necessary, temporarily transition a congested area at less than the minimum altitudes described in § 91.119(b) and (c) while in nonaerobatic flight (as defined in paragraph 3A(1)(c) above).

(4) The transition to egress and ingress and to the aerobatic/flyby area must be in compliance with the following:

(a) During egress (figure 49-2) from the aerobatic maneuvering area, or in the case of the three North American military jet teams, while transitioning from the egress route for flight over a congested area, the pilots are expected to climb at a rate consistent with a safe operation or the best angle of climb pitch attitude for the aircraft involved. If prolonged or maneuvering flight over a congested area is required, the climb shall be continued to at least 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. During the positioning turns above the congested area, there shall be no airshow aerobatic maneuvers performed, as defined in paragraph 3A(1)(a) and (b) above.

(b) During ingress (figure 49-2) to the aerobatic maneuvering area, or in the case of the three North American military jet teams, while transitioning to the ingress route from flight over a congested area, the pilots are expected to leave the altitude being flown, as described above, so that a smooth transition may be made to the performance altitude in the aerobatic area. Steep approaches may be made, but in no case shall the descent angle to the aerobatic area be

less than that required for a normal approach for a landing of the aircraft involved.

(5) Other than the U.S. Air Force Thunderbirds and U.S. Navy Blue Angels, there have been only a very limited number of approvals for performers to overfly the primary spectator area at less than 1,000 feet AGL. The demonstrations are limited to a flight between 500 and 1,000 feet AGL, generally perpendicular to the crowd line, in nonaerobatic, wings-level, or climbing (normal rate) flight.

(6) No performer may overfly a secondary spectator area at less than 500 feet AGL.

(7) Performers must determine at each show site whether geographic and atmospheric conditions allow performance within the aircraft's limitations. If there are obstructions or atmospheric conditions, such as density altitude, that do not allow a safe transition over a congested area or back into the performance area, the operation may be allowed if the performers raise the altitude of the aerobatic or flyby maneuvers so that the egress and ingress over the congested area can be safely accomplished.

F. Program Coordinators. A National Airshow Coordinator is designated in FAA headquarters and Regional Airshow Coordinators are designated for the aviation event programs. The national coordinator is responsible for overall program monitoring and coordination of information and communications between the Department of Defense (DOD), FAA regions, and the public. The regional coordinators are responsible for monitoring the same programs in that region and for coordinating policy and information between FSDO's. The national and regional airshow coordinators function in an advisory capacity. IIC's making on-site evaluations are responsible for technical determinations as to the issuance or denial of a request for waiver.

(1) At any time that an IIC has an airshow issue that requires clarification or that may be of regional or national interest, the IIC shall contact the regional aviation event coordinator.

(a) The regional coordinator assists in resolving the issue and coordinates with the national coordinator in AFS-800, as necessary.

(b) AFS-800 shall consider the issue and shall determine if a policy change is necessary. If so, the division will prepare the new policy and issue it to FAA entities and the airshow industry, as appropriate. As per volume 1, chapter 1, section 2, paragraph 3 of FAA Order 8700.1, no regional supplements to aviation event policy are permitted.

(2) Initiation of enforcement investigations will be reported to AFS-800 as early as possible in the investigation.

G. Air Traffic Coordination. Any request for a waiver or authorization for a public aviation event with operations in controlled airspace must be coordinated with the appropriate ATC facility as early as possible prior to the issuance of FAA Form 7711-1. Any limitations or special conditions considered necessary by the Air Traffic Service shall be made a part of the Certificate of Waiver or Authorization.

(1) An ATC clearance for a low approach (i.e., a special military flyby) does not authorize a pilot to exceed the § 91.117(b) 200-knot speed limitation in Class D airspace. Such an authorization must be specifically requested by the pilot.

(2) ATC may authorize the pilot to exceed 200 knots in addition to a clearance for a low approach. In no case may a pilot construe such an authorization or permission to exceed the § 91.117(a) 250-knot speed limitation below 10,000 feet mean sea level (MSL).

H. Operation of Transponders. ATC transponders must be used in the appropriate airspace as required by § 91.215. The use of transponder and altitude reporting equipment serves to provide better service and increase safety. The ATC may waive these requirements if necessary for emergencies, equipment failures, or for traffic control reasons. If an aircraft does not have an electrical system or is not equipped with a transponder, prior approval must be obtained from ATC for that aircraft to participate in the airshow if that airshow is conducted in airspace requiring a transponder.

I. Special Communications Frequencies. The Air Traffic Service has been very cooperative in offering facility frequencies for use at aviation events. IIC's should inform applicants applying for waivers or authorizations of the procedures for obtaining special frequencies from the Federal Communications Commission (FCC).

(1) The applicant should submit the written request, including the number of special frequencies requested and the justification, 30 days before the event to:

FCC Special Services Branch
1270 Fairfield Road
Gettysburg, PA 17325-7245

(2) Applicants may obtain additional information from the FCC by calling (717) 338-2665, or may fax their requests to the FCC at (717) 338-2696.

However, if applicants wish to receive their frequencies by return fax, they must supply the FCC with the information needed for the FCC to fax the frequencies to the applicant collect.

J. Helicopter Acts Involving External Load Operations. When performing airshow acts that are considered Class B or D external load operations, it is important to ensure that no flights are conducted over persons on the surface unless those persons are part of the act. Consult § 133.25 for the requirements that govern this type of external load operation.

K. Required Crewmembers. With the exception of stunt persons, the special provisions of an airshow waiver provide that only required crewmembers by aircraft type design be carried on any civil aircraft engaged in an aerial demonstration. For additional persons to be on board a performing aircraft, the situation must meet the following conditions and be approved by the IIC.

(1) Each pilot must be qualified and current in the specific make and model of a civil aircraft.

(2) Each pilot must hold a Statement of Acrobatic Competency when the aircraft has functional dual flight controls for all three axes and aerobatic flight is conducted.

(3) Each crewmember must be on board to fulfill a definite safety function.

(4) This limited authority is for special situations and must not be abused. It includes such functions as:

(a) a qualified pilot obtaining experience before inclusion as a nonaerobatic aerial demonstration team member;

(b) a qualified pilot fulfilling a safety function from a pilot station, such as flying cover for closed course air racing;

(c) a qualified person who is required to operate aircraft systems during normal or emergency conditions in flight;

(d) a qualified pilot providing a one-time show site checkout for another qualified pilot who is unfamiliar with the site;

(e) a qualified industry formation training instructor pilot who is conducting formation training; and

(f) on board formation flight safety observers.

L. FAA Airports Coordination. Any event sponsor who requests a waiver for a public aviation event on

an airport certificated in accordance with 14 CFR part 139 must coordinate with the appropriate FAA district office and receive approval for the event ground operations plan prior to the issuance of FAA Form 7711-1. Encouraging event sponsors to include airport management in the coordination will greatly facilitate the process. Any limitations or special provisions considered necessary by the ADO shall be made a part of the Certificate of Waiver. As part of their normal program responsibilities, FAA ADO inspectors may from time to time request information concerning aviation event activities at airports other than those certificated in accordance with 14 CFR part 139.

4. INSPECTOR-IN-CHARGE. To enable the FAA to most effectively manage the aviation event program, FSDO managers shall assign an IIC to the tasks involved with processing an application for a waiver or authorization for an aviation event. These duties include the preseason evaluation meeting, the evaluation of the application and recommending issuance or denial, and, if appropriate, the surveillance of the aviation event. The decision to conduct surveillance of an aviation event is the responsibility of the FSDO manager. Events that have a significant public interest, that have turbine-powered aircraft performing, that have sponsors or performers who are inexperienced or are known to have committed acts of noncompliance with waiver/authorization provisions in the past, or that are conducted at controversial show sites, should be monitored by the IIC who processed the application for a waiver or authorization.

A. IIC Qualifications. The IIC assigned this task and the subsequent surveillance must have completed on-the-job training (OJT), and must have participated in the issuance of three certificates of waiver. The IIC must also have participated in the surveillance of three aviation events as a trainee with a qualified IIC. For events where a military aerobatic demonstration team performs, the IIC must have satisfactorily completed OJT for a military aviation event, including participation in the site feasibility determination required by DOD, the preseason evaluation meeting, the waiver preparation, and the surveillance.

B. No Inspector Available. If the FSDO does not have an inspector who meets the above qualifications, the FSDO manager shall contact the regional airshow coordinator to request an inspector who is qualified to perform the tasks of an IIC. After the regional coordinator identifies an available IIC, FSDO managers should work out the arrangements necessary to accomplish the task.

5. APPLICATION AND APPROVAL. Applications for aviation events are processed by an inspector who has on-the-scene knowledge about the proposed operation and site suitability.

A. Form Used. FAA Form 7711-2, Certificate of Waiver or Authorization Application (figure 49-3) is used. All items on the form may not apply to each event. In other cases, additional information may be required. The most current editions of FAA Advisory Circular (AC) 91-45, Waivers: Aviation Events, or AC 105-2, Sport Parachute Jumping, as appropriate, provide most information necessary to plan and conduct a safe event.

B. Authority to Sign. The FSDO manager should sign a waiver or authorization when the application is approved.

C. Ultralight Vehicles, Hanggliders, and Aircraft. There has been confusion regarding Experimental Category, amateur-built aircraft performing aerobatic maneuvers at airshows. If the aircraft is not prohibited from aerobatic flight and is airworthy, it can be used in exhibition flights. Additionally, any ultralight that meets the applicability of 14 CFR part 103, § 103.1, may be operated as an ultralight vehicle under part 103, or the operator may elect to certificate the vehicle and operate under the applicable aircraft regulations. If the ultralight has been certificated as an aircraft, all operations are subject to the certification requirements (aircraft and pilot), airworthiness requirements, and applicable operating rules. The FAA does not require certification of operators of ultralight vehicles that meet the provisions of § 103.1.

(1) Aerobatic flight demonstrations by ultralight vehicles or hanggliders should be included on a Certificate of Waiver or Authorization, with appropriate special provisions, only when the applicant has provided the issuing office with a statement of determination that the vehicle and the operator are able to conduct the proposed demonstration without creating a hazard to persons and property on the surface. The statement should contain a summary of how the determination was made.

(2) Ultralight vehicles, hanggliders, and gyrocopters must meet the same separation standards for airshow performances that apply to conventional aircraft with a level flight cruise speed of less than 156 knots using 75 percent power (Category III).

(3) Wing walking acts using ultralights are not authorized.

D. Air Carrier Aircraft Demonstrations. Flight demonstrations conducted at an airshow under the provisions of a waiver by any air carrier certificate

holder require thoughtful planning and preparation by the carrier. A past incident occurred involving an air carrier conducting a flyby or low pass in a B-737 along the runway during a fly-in for small airplanes. Since many of the airplanes in the traffic pattern were very small, slow, and, in some cases, without communication equipment, a greater risk of a midair collision was present than under normal air carrier operations. When an air carrier that operates Transport Category aircraft requests authorization to conduct a flight demonstration at an airshow, the IIC shall require the following:

(1) The air carrier must develop a performance package that describes in detail the entire flight profile. The performance package shall specifically address the make and model of the aircraft and take into consideration any specific flight safety conditions of that aircraft.

(2) A waiver provision should be developed with the following limitations:

- minimum altitude - 200 feet AGL
- maximum bank - 30°
- maximum speed - 300 knots
- minimum speed - V_{ref} for the configuration and weight of the aircraft, or as required for the go-around sequence
- touch-and-go landings should be permitted only when the carrier has addressed the crew procedures, the runway requirements, and the abort procedure in sufficient detail

(3) Coordination with the air carrier's principal operations inspector (POI) is necessary before approval by the IIC.

6. ASSISTING SPONSORS WITH WAIVER OR AUTHORIZATION APPLICATIONS.

A. Sponsor Planning. Thorough planning has a direct bearing on the success and safety of any event. The sponsor should be encouraged to develop an effective plan for all facets of the event. The inspector should assist the sponsor by discussing the following subjects:

- (1) the type of event;
- (2) the status of performers (military and/or civil);
- (3) the site selection (airports, fairgrounds, other sites);
- (4) the planned crowd control and policing of the aerobatic/flyby area;

(5) the emergency equipment and personnel such as physician, ambulance, fire truck, crash wagon, and associated plans of action;

(6) the normal airport traffic and ATC consideration; and

(7) the vehicular traffic problems.

B. Sponsor Experience. The experienced sponsor is generally well acquainted with the requirements and procedures for obtaining the waiver or authorization. First time sponsors may not be aware that a waiver or authorization is required.

(1) The most current edition of AC 91-45 or AC 105-2 contains important information for planning and conducting safe aerial demonstration events. They also provide information on how to request FAA Form 7711-1.

(2) Regardless of the purposes for which an aviation event is sponsored, applications for events or sites judged unsafe are not accepted. A waiver is issued only if the FAA determines that a proposed event is in the best interest of public safety.

C. FAA Form 7711-2, Certificate of Waiver or Authorization Application.

(1) Applications for airshows or air races should be submitted at least 45 days before the date of the event, 60 days for events with a North American military jet team. Only after all requirements have been met by the sponsor, approval or denial of the application should be completed within 30 days of receipt by the FSDO.

(2) Applications for parachute jumps made over or into a congested area or open air assembly of people must be presented at least 4 days before an event. Approval or denial of the application must be completed within 3 days of receipt by the FSDO.

(3) The completion and submission of FAA Form 7711-2 and all supporting documents are solely the applicant's responsibility.

(4) Upon approval, FAA Form 7711-2 and its attachments become a part of FAA Form 7711-1.

(5) The applicant should attach maps, charts, diagrams, or other data appropriate to the activities and locations to FAA Form 7711-2 upon application for a Certificate of Waiver or Authorization.

(6) For most events, the supporting data must address the following major concerns.

(a) When the public attends the event, spectator areas shall be provided to isolate spectators from:

- i. the flight areas;
- ii. the active runways;
- iii. the run up areas; and

iv. the other active areas, such as emergency or police helipads or parachute landing areas. There should be provisions for sponsors to brief pilots who have static display aircraft to use a “pushback” procedure to reposition the aircraft away from spectators whenever possible.

(b) Supporting documents should describe the methods that will be used to ensure security of areas outside of the designated spectator area, especially the area under the aerobatic maneuvering area.

(7) Except for official military pilots, each pilot must be properly certificated and rated for the aircraft to be flown. In addition, each nonmilitary pilot who performs aerobatics must possess FAA Form 8710-7, Statement of Acrobatic Competency (figure 49-4) or Transport Canada Aviation (TCA) Form 26-0307, Statement of Aerobatic Competency signed by an inspector. This includes foreign civil airmen.

(8) Non-airmen participants, such as parachutists, can be accepted on the basis of a license issued by the United States Parachute Association (USPA) or similar organizations. The FAA does not require certification of operators of ultralight vehicles, wing walkers or trapeze occupants, ribbon cut personnel, and drivers of ground vehicles for a car-to-plane transfer, and other non-airmen participants.

7. AIR RACES.

A. Course Design. Closed-course pylon air racing, including both demonstration and competitive events, are conducted over a fixed, short-distance race course, usually located on or adjacent to an airport. It is the sponsor's responsibility to lay out the course so that hazards to spectators and other persons on the surface are prevented. Only persons and vehicles authorized by the participating race organization shall be permitted beyond the crowd line during racing operations.

(1) Authorized persons may include press, aircraft support crews, judges, and officials at the start line.

(2) Authorized persons must clear the runway and move back to at least the runway “hold short” line 1 minute before the launch for standing starts. No one shall be permitted in front of the first row of aircraft after this time except the starter flag team.

(3) Pylon crews, press, and vehicles, except the home pylon flag crews, shall remain inside the pylon course during races. Race timing teams are permitted in the area between the crowd line and the show line during racing.

(4) Non-competitive demonstration races should be handled like a competitive event, including a determination of pilot competency. Demonstration races should be choreographed from takeoff to landing. New classes of racing aircraft must be found competent by a similar existing air racing organization.

B. Participants. A fundamental principle of closed-course air race safety, including demonstration events, is that all of the participants need to be associated with an organization that is dedicated to the sport. The structure and existence of a credible air racing organization provides an internal level of safety that would not otherwise exist. It is recommended that the IIC determine the following before issuing a waiver for an event that includes closed-course air races.

(1) Determine whether an air race organization exists that is capable of evaluating the participating pilots and aircraft.

(2) Determine whether the participants are qualified by the air race organization.

(3) Obtain statements from the organization regarding the air racing competency of each airman.

(4) Obtain information from the organization regarding the qualifications of those who are appointed by the organization to evaluate the competence of airmen.

(5) Determine whether the organization has established safety operating rules.

(6) Ensure that the aviation event is not an ad hoc air race, but rather has the benefit of thoughtful planning and scrutiny by an organization responsible for the entire operation.

C. Air Racing Organizations. The FAA has determined that the following air race organizations have credible programs, policies, and procedures for determining air racing pilot competence and developing race course designs for the safe conduct of air racing events, including demonstration races. The current contact for each air race organization can be found at <http://www.faa.gov/avr/afs/airshow.htm>.

(1) International Formula One

(2) Unlimited Division

(3) AT-6/SNJ Racing Association, Inc.

(4) Formula V Air Racing Association

(5) Professional Race Pilots Assn. (Biplane)

(6) Sport Class

(7) T-28 Air Racing Association

D. Typical Race Courses. A diagram of a typical air race site is shown in figure 49-5. A diagram of a typical unlimited race course is shown in figure 49-6. Two examples of suitable air race site diagrams are shown in figure 49-7. The method of determining the various distances used is discussed in the following paragraphs.

E. Race Course Design. A satisfactory pylon air race course design involves the shape of the course and its relationship to the area around the course, especially the spectator areas. Both of these factors depend upon the maximum speed of the racing aircraft and the maximum “g” loading (acceleration forces) that the aircraft are expected to encounter when flying the race course in a normal manner. The maximum height at which the aircraft are expected to fly during the race is also a factor.

F. Race Course Speeds.

(1) The following are typical speeds for each racing class.

- (a) Formula V: 160 mph
- (b) Sport Biplane: 210 mph
- (c) AT-6/SNJ: 225 mph
- (d) International Formula One: 250 mph
- (e) T-28: 300 mph
- (f) Unlimited: 450 mph and higher

(2) As additional classes become active, they shall be added to this list with appropriate speeds specified.

(3) The maximum “g” loading for a race aircraft flying the course in a normal manner has been set at 3.5 “g’s.” In actual racing, where maneuvering and turbulence is encountered, momentary “g” loadings in excess of this figure can be expected.

(4) The speed and “g” loadings permit the calculation of the minimum radius turn that should be permitted in the design of the race course. The formula for the turn radius for a given “g” loading and speed is shown below. (Using a value of 3.5 for “g,” the minimum turn radius is shown for each racing class in figure 49-8.)

Minimum Turn Radius Formula

$$R = \frac{V^2}{32.2 \times \sqrt{g^2 - 1}}$$

R = Minimum turn radius (feet)

V = Aircraft speed in ft/sec or V = knots x 1.689

32.2 = Acceleration force of gravity (ft/sec²)

g = “g” force in turn

(5) The angle of a turn (the change in course required to negotiate the turn) should be planned to avoid forcing a race aircraft to make the turn too sharply. A maximum turn angle that does not exceed 65° has been found to be satisfactory.

G. Race Course Show line. During the race, aircraft occupy a raceway around the race course. The edge of this raceway closest to the spectator area is the show line, over which no aircraft is permitted to cross while racing.

(1) The raceway width may vary from 150 feet to 500 feet in the various racing classes so that the aircraft may pass one another. The critical requirement is that no racing aircraft is permitted to cross over the show line during the race.

(2) The minimum turn radius, the maximum turn angle, and the raceway width define the limits of a satisfactory race course. The race course relationship to the spectator areas or other populated area must also be defined. All racing classes require a distance of 500 feet between the primary spectator area and the show line.

(3) An additional safety area is required to ensure that spectators are protected in the event that debris leaves a race aircraft. Should this occur while the aircraft is in a turn, the debris will follow a path tangential to the turn from the moment it departs the aircraft.

(a) The theoretical straight line distance to a point on the ground that the debris will follow (ignoring air resistance) depends upon aircraft speed and altitude. This distance is the scatter distance. A maximum racing altitude of 250 feet is acceptable for aircraft weighing in excess of 1,000 pounds (presently, the AT-6/SNJ and the Unlimited class). A maximum racing altitude of 150 feet is acceptable for aircraft weighing 1,000 pounds or less (presently the International Formula One, Sport Biplane and Formula V classes). The scatter distance for each racing class is shown in figure 49-8.

Scatter Distance Formula

$$S = V \times \sqrt{\frac{2 \times A}{32.2}}$$

S = Scatter distance (feet)

V = Aircraft speed in ft/sec (V = knots x 1.689)

A = Maximum aircraft altitude (AGL) (150 or 250 feet)

32.2 = Acceleration of gravity (ft/sec²)

(b) The theoretical location of all possible debris impact points from an aircraft in a turn is a circle whose radius is the square root of the sums of the squares of the turn radius and the scatter distance. This radius is the scatter radius (figure 49-8).

Scatter Radius Formula

$$Sr = \sqrt{(R^2 + S^2)}$$

Sr = Scatter radius (feet)

R = Turn radius (feet)

S = Scatter distance (feet)

(c) In order to provide an acceptable margin of safety, the difference between the turn radius and the scatter radius is multiplied by a safety factor of 1.5 and added to the turn radius to define the safety radius (figure 49-8).

Safety Radius Formula

$$Sfr = R + 1.5 \times (Sr - R)$$

Sfr = Safety radius (feet)

Sr = Scatter radius (feet)

R = Turn radius (feet)

(4) The critical turn with respect to the safety radius is the turn that enters the portion of the race closest to the spectators. The safety area is constructed as follows:

(a) bisect the course change angle for the critical turn;

(b) mark off the minimum turn radius for the class of aircraft racing, as shown in figure 49-5, from the pylon position to a point on the angle bisector; and

(c) draw an arc, whose radius is the safety radius, from the point described in paragraph 13G(4)(b) above. No spectators shall be within this arc (figure 49-5).

(5) In some cases, it may be expedient to design the race course around the spectator area. While spectator area-to-show line distances are unchanged, the safety zone is now outside the spec-

tator area and is no longer a factor. Roads to this kind of a race course layout must be completely closed off to the spectator area during the race.

(6) Race courses are normally flown in a counterclockwise direction (left turns). Problem sites may require flying the course in a clockwise direction (right turns). Other modifications of the race course, such as changing the angular relationship of the spectator line to move the crowd away from a turn pylon, or lengthening the race course to move the turn pylon away from the crowd, may also be necessary.

8. BALLOON MEETS AND COMPETITIONS.

A. Balloon Meets. Routine balloon ascensions can usually be conducted in accordance with the provisions of 14 CFR part 91, and no waiver is required. However, balloon competitions will likely require a Certificate of Waiver or Authorization with appropriate special provisions to maintain the safety of the nonparticipating public (figures 49-9 and 49-10).

B. Balloon Operations. Flight competitions by manned balloons often involve operations at horizontal and vertical distances less than those required by § 91.119(b) and (c). Operations at these altitudes are necessary to take advantage of varying wind conditions at different altitudes which are the balloonist's only means of directional control. These operations are acceptable when appropriate limitations are developed to ensure public safety and the safety of the participants.

C. Public Safety. Ballooning has grown significantly in recent years, and competitive tasks have been refined and standardized. The FAA's concern is that every effort is made to ensure public safety. The intent of § 91.119 should never be compromised when issuing waivers and developing special provisions.

(1) Target areas must be under the control of event officials. The use of portable bull horns or public address systems provides an adequate means for crowd control, or for directing balloonists away from the target area in an emergency. Balloon landings are not normally permitted closer than 1,500 feet from the target or goal, although event officials may allow a reduction of this distance to 500 feet for safety considerations. Only balloon recovery ground support crewmembers and authorized event officials shall be present at the landing site.

(2) The relatively slow speed of balloons allows spectators to move from harm more easily than at an airshow where fast moving aircraft are performing. Accordingly, the designated spectator area can be minimized to a 200 foot radius away from the designated balloon goal/target. IIC's should ensure

that the sponsors assure spectators remain clear of the goal/target area during balloon meets or competitions.

D. Balloon Competition Event Waivers. To be found eligible for a waiver of § 91.119(b) and (c), the applicant must prepare and maintain an Organized Manned Balloon Competition Manual which has been found ACCEPTABLE by the jurisdictional FSDO. The contents of the manual are the basis for issuance of the waiver. The applicant and the participants must comply with the balloon manual contents and requirements. No operations shall be conducted under a waiver except while in VFR conditions during the period from sunrise to sunset, as specified in § 91.155.

(1) Event organizers should be asked to submit a set of competition rules when applying for a waiver. Although this is not a regulatory requirement, it should be encouraged for the sake of conformity and safety. These competition rules should generally conform to a recognized industry standard, such as those developed by the Balloon Federation of America (BFA) for events sanctioned by the BFA Competition Division. (figure 49-11).

(2) A waiver of § 91.119(b) and (c) for organized balloon competitions can be issued based on submission of an application containing the proposed operations and contents of the Organized Manned Balloon Competition Manual. (See paragraph 8E below.)

(3) Section 91.119(b) and (c) should be waived only to the EXTENT NECESSARY to accommodate the event while allowing an acceptable level of safety. Evaluation of the site by the IIC determines the actual separation distances for a specific event; however, the following MINIMUM distances and special provisions MUST be observed.

(a) Section 91.119(b) may be waived to allow flight over a congested area at an altitude of no less than 500 feet above the highest obstacle within a 500 foot horizontal radius of the balloon. This section of the regulation may only be waived within a specified maximum distance from designated launch sites and/or target areas. This designated area must be determined by the event organizer and the FAA; this area must also be clearly delineated in the event organizer's manual before the event. (A scaled map, drawing, and/or aerial photographs should be in the event organizer's manual before the event.) The designated area should be the minimum area necessary to accommodate the event, and the area should be consistent with the event organizer's ability to control operations. A waiver of § 91.119(b) should not be issued if the target area is so small that a normal descent (200 to 300 feet per minute) cannot be made.

(b) Section 91.119(b) may be waived to allow flight above, but not less than 75 feet from, any open-air assembly of persons (designated spectator area) under the direct control of the event organizer.

(c) Section 91.119(c) may be waived to allow flight over open water or sparsely populated areas, no closer than 200 feet horizontally to any person, vessel, vehicle, or structure.

E. Organized Manned Balloon Competition Manual. The following is a list of the minimum required topics that must be addressed in the competition manual for a balloon event. Other information may also be included (figure 49-12).

(1) Responsibilities and procedures:

- (a) duties of personnel;
- (b) registration and airworthiness determinations;
- (c) pilot qualifications;
- (d) pilot/crewmember briefing responsibilities;
- (e) copy of letter(s) of agreement; and
- (f) event flight crewmember qualifications, experience, and maximum numbers onboard each balloon for each type of event.

(2) Ground operations:

- (a) clear areas;
- (b) spectator areas (designated primary and potential secondary areas);
- (c) crowd control requirements; and
- (d) landowner relations/notification.

(3) Flight operations:

- (a) areas of operations;
- (b) types of operations;
- (c) altitudes;
- (d) weather requirements;
- (e) communications requirements; and
- (f) air traffic coordination.

(4) The Organized Manned Balloon Competition Manual must incorporate § 91.119(b) and (c) limitations as appropriate to the event in a form and manner acceptable to the FAA and the event organizer. The event organizer should describe in the manual the

manner of operations that are needed to comply with the event waiver as clearly as possible.

(5) The Organized Manned Balloon Competition Manual must include a list and description of all events, tasks, and races to be included in the waiver.

F. Personnel. The Organized Manned Balloon Competition Manual must contain the names of the following personnel who are responsible for the event: the flight director (event director); the person responsible for establishing and maintaining crowd control; the event organizer's FAA liaison; and the persons responsible for obtaining weather data and conducting the pre-event pilot and event flight crewmember briefings.

G. Letters of Agreement. In addition to the Organized Manned Balloon Competition Manual, a letter of agreement clearly detailing all responsibilities may provide an excellent means of control. In the manual the event organizer outlines the responsibilities assumed, such as crowd control, notification, communication, and briefing of participating pilots and event flight crewmembers. ATC identifies the services they provide, such as up-to-date weather, a portable tower, or direct communication line with the tower. The FSDO identifies the necessary aircraft and airman certification qualifications and site inspection requirements through the waiver process.

H. Balloon Event Flight Crewmembers. Only pilot and event flight crewmembers, as described in the Organized Manned Balloon Competition Manual, may be carried onboard any balloon operating under the waiver issued to the event organizer.

(1) Event flight crewmembers will be restricted to the minimum number required for the type of event as specified in the Organized Manned Balloon Competition Manual. Event flight crewmembers should be kept to a minimum for competitive events.

(2) All event flight crewmembers must have received appropriate training concerning their duties relative to the event, and must attend the event pilot and flight crewmember briefing before each event. These crewmembers must sign a statement that they have been briefed and that they are designated event flight crewmembers for the purpose of the specific event for which the waiver was granted.

(3) The pilot-in-command (PIC) of each balloon is responsible for obtaining the signed statements on a form furnished by the event organizer. This form will be maintained by the PIC during the event,

and returned to the event organizer and made available to the FAA upon request.

(4) Balloon event flight crewmembers are differentiated from ground support launch and recovery crewmembers.

I. Maximum Wind Speed. The maximum wind speed for launch and at the target zones is mutually determined by the event organizer/flight director and the FAA. These limitations shall be placed in the operations manual. The maximum wind speed limitations should be determined after considering the local terrain conditions and the competency of the participating airmen and the limitations of the aircraft. If a balloon does not have an FAA-approved flight manual, operating limitations can be found on the type certificate data sheet (TCDS). The actual means of determining the wind speed must be mutually agreeable to the FAA and the event organizer. The IIC and/or the event organizer/flight director may wish to consider moving the designated spectator area barriers if the wind speed is excessive.

J. Types of Competitive Tasks. Competitive tasks are exercises in navigation using changes in wind direction. The winner of a task is the balloonist who can best take advantage of changes in wind direction by ascending and descending. Event organizers generally engage launch directors to control staggered launch times and ensure safety for multiple launches. The following are some typical balloon competitive tasks, based on information provided by the BFA. The indicated landing distances have been established by BFA to keep balloons, which have already dropped markers, clear of the target area, for the approach of other balloons.

(1) *Pilot Declared Goal (PDG).* Pilots define goals by description and map reference. The goals are declared in writing and given to a timekeeper. Each pilot flies from the designated launch area and attempts to drop a marker close to the selected goal. The result is the distance from the declared goal to the observed mark. The shortest distance wins. The landing after dropping the marker cannot be less than 1,500 feet from the declared goal.

(2) *Judge Declared Goal (JDG).* Each pilot flies from the designated launch area and attempts to drop a marker as close as possible to a goal set by the officials. The result is the distance from the declared goal to the observed mark. The shortest distance wins. The landing after dropping the marker cannot be less than 1,500 feet from the declared goal.

(3) *Multiple Judge Declared Goal (MJDG).*

Each pilot flies from the launch area and chooses one of a number of goals set by the officials. The pilot attempts to drop a marker near the goal chosen. The result is the distance from the observed mark to the nearest goal. The shortest distance wins. The landing after dropping the marker cannot be less than 1,500 feet from the selected goal.

(4) *Elbow (ELBO).* Each pilot flies from the launch area and attempts to achieve the greatest change of flight direction during the flight with the least angle of divergence. A 180° change in direction with a zero angle of divergence is best. Two concentric circles, specific distances apart, surround the launch point. The pilot drops two markers. The first marker must be dropped between the inner and outer circle. The second marker must be dropped within the outer circle. The second marker cannot be less than 5,000 feet from the first marker. Landing after dropping the marker is at the pilot's discretion.

(5) *Hare and Hound (HNN).* In the West, this may be referred to as the "Road Runner Race." The lead balloon, "the hare," takes off several minutes before the rest of the balloons and drops a marker at a designated point. The hare balloon deflates and is removed from the landing area. The marker dropped by the hare balloon becomes the target for the later balloons, "the hounds." The hounds try to drop markers as close as possible to the hare balloon's target. After dropping the marker from the hound balloon, landing is at the pilot's discretion but cannot be less than 1,500 feet from the target.

(6) *Convergent Navigational Task (CNT).* Officials establish a goal, but pilots find their own launch areas for the attempt to reach the goal. The boundary of the launch area declared by the pilot is the physical boundary of a field or a circle with a 300-foot radius from the inflation point, whichever is less. The officials place a target at the goal 30 minutes before the launch period. The pilot launches from a selected site, attempts to navigate to the target, and drops a marker. The result is the distance from the target to the marker. The shortest distance wins. The landing after dropping the marker is at the pilot's discretion but cannot be less than 1,500 feet from the target.

(7) *Fly On Task (FOT).* The pilot declares a goal to fly to after dropping a marker in another task.

(8) *Gordon Bennett Memorial (GBM).* The competitors maneuver their balloons a prescribed distance from a target on the ground (scoring area). They then attempt to maneuver back to the scoring area and drop markers on the target. As long as the

scoring area is large enough and kept clear of spectators, this event should cause no significant problem.

(9) *Watership Down.* This is a two-part task. Pilots find their own launch sites and fly to a target established by the officials. At a specified time before the launch, a hare balloon takes off adjacent to the target and drops a marker at a designated point. This marker becomes the second target. The hare balloon deflates, and the envelope remains flattened on the ground to serve as a guide to the second target area. Each competing pilot drops a marker as close as possible to the first target, which was the launch site of the hare balloon. Pilots then fly-on to drop a second marker as close as possible to the target marker placed by the hare balloon.

(10) *Key Grab.* This event usually has a target (generally a tall pole with the keys to a new automobile affixed to the top) in a centralized location. The balloonist must depart a predetermined distance from the target. The object is to maneuver the balloons, one by one, over the target so the pilot can attempt to grab the keys as the balloon goes by the pole.

(a) The area around the pole must be completely clear of spectators and under the control of the event officials. Event organizers should have portable bull horns or a public address system to control the crowd movements or to direct the balloonist away from the target area in an emergency. If these precautions are observed, a waiver of § 91.119(c) can be issued to allow operations closer than 500 feet to the crowd.

(b) The event organizer must establish procedures to ensure that the balloonists will abort the key grab attempt if it becomes apparent that the balloons' ground tracks will not be within the operating area or when a realistic chance for the key is no longer possible. The landing areas must be segregated from the spectators; only bona fide recovery crews should be present in the landing area to assist the balloonist with recovery. All participants must be briefed before the operations.

9. MILITARY AERIAL PERFORMANCES.

A. General Considerations. The guidelines in this paragraph apply to military aircraft, military pilots, and parachute teams specifically designated to perform missions for the DOD, the Canadian Defense Forces, command approved tactical demonstration aircraft as well as some foreign flight demonstration teams.

(1) FAA headquarters has not issued any special approvals, authorizations, waivers, or blanket

exemptions concerning any military team airshow performances.

(2) The teams' standard maneuvers are normally acceptable within FAA policy. Each team knows the FAA policy applies to them.

(3) The teams are not exempt from any regulation or policy that is used in issuing a waiver.

(4) DOD has agreed to approve participation at official events only when safety is not compromised.

(5) Under no circumstances shall airshow aerobatic maneuvers be conducted over spectator or congested areas (figure 49-2). While the guidelines in this section are primarily oriented to U.S. military precision flight demonstration teams, certain procedures may also be applicable to the Canadian Defense Forces Snowbirds.

B. DOD Emphasis. DOD has emphasized the importance of military participation in airshows. This participation is regarded as an essential contribution to armed forces recruiting, retention, and community relations missions.

C. Approved Profiles.

(1) All performances shall be in accordance with a planned profile approved by the applicable military command. The various military teams provide AFS-800 with command-approved maneuver packages for acceptance. The sanctioned North American Military flight demonstration teams are the U.S. Air Force Thunderbirds, the U.S. Navy Blue Angels, and the Canadian Forces Snowbirds.

(2) IIC's shall incorporate procedures into the airshow briefing to ensure that performers who hold command approval for such maneuvers can show evidence of FAA headquarters' acceptance, produce documentation of exactly what was approved and accepted, and graphically show where the checkpoints will be at the showsite for accomplishment of the maneuver or turn. This should be accomplished as early as possible in the event planning process.

D. Team Qualifications and Training. The proficiency and ability of the members of military units are determined by the military command and do not require approval by an FAA IIC. Team members undergo rigorous training to develop the skills necessary to perform the precision maneuvers and routines. Team members should not be questioned about their competency to perform their approved routines.

E. Military Participation. DOD requires the event sponsor, or a designated representative, to complete a

Request for Military Aerial Support Form (DD Form 2535) when requesting a U.S. military aerial demonstration team on or off a military installation and when requesting military aircraft participation off a military installation. The sponsor or representative must forward the form to the appropriate FSDO. The FSDO completes Section V (program), FAA or Appropriate Governmental Agency Coordination (Airspace Coordination) (figure 49-13). The proposed site requiring a waiver must be classified as either satisfactory, conditional-satisfactory, or unsatisfactory during a site feasibility study conducted by an FAA inspector. A satisfactory classification indicates that a waiver can be issued following compliance with other requirements. A conditional-satisfactory classification will include specific conditions that need to be met, such as closing roads, evacuating buildings, etc. An unsatisfactory classification indicates that the requested activity cannot be performed safely at the proposed site, and a waiver shall not be issued. If the site is deemed unsatisfactory by the FAA, the request is not accepted by DOD.

(1) The feasibility study is usually conducted during the summer months for an event that will take place the following show season. The inspector should conduct this study in a TIMELY MANNER, thereby providing the sponsor ample time to submit the DOD form before the DOD suspense date. Normally, an on-site inspection IS REQUIRED to determine the status of new construction or other environmental changes in the area.

(2) If the inspector believes that templates of the proposed maneuvers and the 7.5 minute series Topographic Quadrangle Map for the area are necessary to conduct the feasibility study, the inspector should request the templates and the map from the sponsor of the event. This may be necessary at a site where the U.S. Navy Blue Angels, the U.S. Air Force Thunderbirds, or the Canadian Defense Forces Snowbirds are appearing for the first time or at sites where new construction may affect a location's suitability for an airshow. Availability of templates varies from year to year. The standard aerobatic maneuver area for U.S. military jet performers is 1 NM either side of show center and 3,000 feet (2,700 feet minimum) across from front to back. Also, the maneuvers package for the current year should be used to evaluate this site considering any option maneuvers outside of the 1 NM area either side of the show center.

(3) Requests for military participation (fly-by) at civic events, funerals, etc., should be approved if the site is satisfactory with the understanding that no sections of part 91 will be waived.

(4) The U.S. Air Force Thunderbirds, U.S. Navy Blue Angels, and occasionally the Canadian Forces Snowbirds will conduct preseason meetings with the airshow sponsor and jurisdictional FAA offices. These meetings will usually occur in the winter months before the start of the airshow season. Participation in these meetings is mandatory for the jurisdictional FSDO. It is imperative to review site suitability in detail with the airshow sponsor and military demonstration team representative at this meeting. This will include, but is not limited to, the placement of the aerobatic maneuver area and impact on the non-participating public on the surface under this "box," review of proposed ingress/egress routes that will require FAA approval, and any impact on scheduled air carrier operations.

F. Specialized Teams. The North American Armed Forces also authorize specialized teams that demonstrate the capabilities of one particular aircraft; e.g., the U.S. Air Force F-16 Tactical Demonstration (TAC DEMO) Team. They may also develop maneuver packages which define the aerobatic routine to be performed at aviation events. If so, these packages, as well as a list of pilots authorized to conduct the aerobatic routines, are submitted to AFS-800. AFS-800 distributes copies of the command-approved packages to the regional airshow coordinators. Only the designated aircraft and pilots may perform at airshows in which § 91.303 is waived.

G. Special Considerations. Although the FAA has emphasized the need to maintain standard airshow separation requirements, U.S. military flight demonstration teams (Thunderbirds, Blue Angels and Snowbirds) may request and receive a special waiver of § 91.119(b) and (c). This special waiver would permit transition to and from flight at an altitude as low as 200 feet AGL, along an FAA-APPROVED ingress/egress route to and from the aerobatic area within a 3 NM radius from the designated show center (see paragraph 3E). The request for a special waiver must be made by the commanding officer of the military team. The waiver shall be approved when the following conditions are met.

(1) An on-site survey of the demonstration area must be completed by the team's commanding officer or by a team member designated by the commanding officer.

(2) A coordination meeting must be held to discuss the potential impact of the operation on the surrounding area. The meeting must be attended by the team's commanding officer or a designated team

member, the waiver applicant or a designated representative, and the appropriate FSDO representative.

(3) The FAA must receive a letter from the commanding officer or the designated team member requesting a waiver of § 91.119(b) and (c). The letter must contain the following information:

(a) the specific altitudes and the area over which the special waiver is required;

(b) a statement that the commanding officer shall accept full responsibility for the operation; and

(c) a statement that the commanding officer or designated team member, as an authorized representative of the DOD, has done the following:

i. completed an on-site survey of the proposed area of operation;

ii. discussed the impact of the operation with the waiver applicant and the appropriate FSDO representative; and

iii. determined if the demonstration, as provided to the FAA in the command maneuvers package, can be safely conducted in the area.

(4) Flight over congested areas on FAA approved ingress/egress routes within 3 NM of show center as low as 200 feet AGL is authorized if the IIC can determine that the ingress/egress routes are:

(a) not over persons on the ground, if the performing aircraft will be flown inverted outside of the aerobatic maneuvering area;

(b) not over or within 500 feet laterally of open air assemblies of persons;

(c) not over sensitive areas such as occupied schools, hospitals, crowded shopping mall, etc.

NOTE: Obstruction clearance is the responsibility of military flight demonstration team, but should be discussed with the team representative.

H. Arrival Shows. Aerial demonstration teams often require an arrival demonstration. This normally consists of several passes for visual familiarity with existing landmarks and maneuvers practice using these landmarks. Details of the arrival should be worked out during the coordination meeting described in paragraph 9G(2) above.

(1) If the arrival show includes aerobatic operations over populated areas, the arrival show cannot be authorized. A good rule of thumb for determining if an arrival show should be approved is, "Will everything necessary for the event itself be taken care of

(including a waiver) except crowd control and emergency facilities?" If the answer to this question is no, then an arrival show can only consist of normal flight operations conducted within the regulations.

(2) The military often asks to have the team advance coordinator or operations officer accept the arrival show briefing and relay all necessary information to the team. The IIC should allow this if the team representative is a rated aviator or a non-rated officer serving with the team. Briefings with the team representative must be completed before the team's arrival at the show site.

I. DOD-Sanctioned Military Teams. Only the Aviation Liaison Officer in the Office of the Assistant Secretary of Defense for Public Affairs can sanction (DOD-sanction) a team. The only DOD-sanctioned teams are:

U.S. Air Force Thunderbirds
Airshow Coordinator
445 Tyndall Ave.
Nellis AFB, NV 89191-6079
(702) 652-9593

U.S. Army Parachute Team
Operations Officer
Box 70126
Ft. Bragg, NC 28307-0126
(919) 396-2036

U.S. Navy Blue Angels
Events Coordinator
NAS Pensacola, FL 32508
(904) 452-2585

U.S. Navy Leap Frogs
Navy Special Warfare Center
2446 Trident Way
San Diego, CA 92155-5495
(619) 437-2820

J. Foreign Military Teams. The considerations and procedures of this chapter also apply to military teams sanctioned by other countries and approved by AFS-800. The letter of approval for foreign military teams may only be issued by AFS-800. Generally, Flight Standards personnel will observe a private demonstration performance before the approval is issued.

K. DOD-Sanctioned Parachute Teams. DOD has officially sanctioned the U.S. Army Golden Knights and the U.S. Navy Leap Frogs as parachute teams. A team may have more than one unit operating under the designated team name (for example, two Golden Knight teams--the Black Team and the Gold Team--jumping at two different locations).

(1) The DOD-sanctioned military team determines site acceptability, effect of wind conditions, and location of exiting the aircraft. This includes the decision to exit over a spectator area and the determination of authorized passengers onboard the aircraft during performances. DOD accepts the responsibility for these technical judgments with respect to the jump exhibition safety.

(2) An application for a certificate of authorization must be submitted to the jurisdictional FSDO. The application must contain a statement that the military command or service has determined that adequate safety margins exist at the site (from a performers perspective) for the scheduled demonstration by the specific team on a specific date.

L. Non-sanctioned DOD Parachute Teams. Other military jump teams, such as the U.S. Navy's Chuting Stars and the U.S. Air Force Academy's Wings of Blue, are not DOD-sanctioned. They may be allowed to perform the same jumps as civilians with a USPA class D license. Tactical airborne demonstrations must be conducted no closer than the Category II show line.

(1) If an authorization is required under part 105, it may be issued only for military jump operations when all aspects of training, equipment, and procedures are under the military's direct control and responsibility. In the case of an authorization for operations over or into a congested area (§ 105.15), the unit is required to meet the same standards as DOD-sanctioned teams and hold a USPA class D license.

(2) If it is unclear whether a member meets USPA requirements, coordination with the military liaison or AFS-800 may be appropriate. The IIC must determine if the team members have a class D license.

M. Tactical airborne demonstrations are conducted by paratroopers assigned to tactical units and employ standard military equipment and procedures. The drop zone for such demonstrations should be on and beyond the Category II show line. These paratroopers do not require any USPA ratings or need to meet any recency of experience requirements.

N. Additional Information. Any complaints received by the FAA as a result of the aerial demonstration shall be forwarded to the designated military representative for disposition. Any questions involving a military team should be directed to the appropriate team. Enforcement action will be conducted according to current FAA policy.

10. NIGHT AND/OR PYROTECHNIC DEMONSTRATIONS.

A. Authorization. Aerobatic performers may request authorization to conduct aerial demonstrations at night (after official sunset). The demonstrations are typically conducted with pyrotechnic devices attached to the wings. Other demonstrations use numerous landings lights, strobe lights, or smoke. These demonstrations can be conducted no lower than 500 feet and no higher than 5,000 feet AGL. Jet aircraft performers may request a higher ceiling.

B. Requirements. Inspectors can accommodate such requests by ensuring that the following have been accomplished.

(1) The pyrotechnic or light installations are appropriately documented in the aircraft's maintenance records.

(2) The sponsor and the pilot have made the necessary arrangements with local authorities concerning the use of pyrotechnics (hazardous material (HAZMAT) and fire codes).

(3) All aerobatic performers who conduct night and/or pyrotechnic demonstrations after local sunset must have the appropriate authorizations on their FAA Form 8710-7 or TCA Form 26-0307.

11. PARACHUTING - CIVIL AND FOREIGN MILITARY TEAMS. Although many airshow activities may require waivers, parachuting or skydiving demonstration jumps do not require waivers. As provided in part 105, some of these jumps do require a certificate of authorization. An FAA Form 7711-1 is used for authorizations for parachute jumps.

A. Parachutists Not Associated with the USPA. Parachutists who are not members of the USPA and who wish to participate in a demonstration or exhibition jump over or into a congested area, must present satisfactory evidence of the experience, knowledge, and skill equivalent to that required by the USPA. Although the majority of contacts with the parachutists are made by operations inspectors, questions concerning airworthiness or engineering should be referred to AFS-300 and/or ASW-190 for resolution. In some cases, the local USPA area safety and training advisor may be able to answer safety questions regarding the jump and landing area. For assistance in locating a USPA area safety and training advisor in your area, contact USPA at (703) 836-3495.

(1) If the applicant is unable to provide adequate information about the event or jumper's qualifications, inspectors may require a demonstration jump (not over a congested area) before approving an authorization.

(2) The USPA is located at 1440 Duke Street, Alexandria, VA 22314 (phone number (703) 836-3495). This organization has adopted its own safety rules and licensing standards for parachutists, instructors, and jumpmasters. Additionally, the USPA has pledged to implement a policy of self-policing so that conflicts with other airspace users are avoided and a high level of safety is maintained. Toward this goal of assisting the FAA, the USPA has supplied every FSDO with a brochure of its rules and safety programs and has offered assistance any time the FAA has encountered problems with a particular club or has questions regarding parachuting.

B. Safety. Part 105 states rules designed to protect the general public and other users of the national airspace from sport parachuting activities.

(1) When a parachute jump is conducted over or into a congested area, a certificate of authorization is required.

(2) An open-air assembly of persons usually occupies a relatively small area. Therefore, it should not be a problem to avoid these areas during an exit. The primary purpose of an exit limitation over an open-air assembly is to provide a higher level of safety under the remote possibility that a jumper would be unable to deploy one of two state-of-the-art parachutes.

C. Certificate of Authorization. Section 105.15 includes rules applicable to jumps over or into congested areas or open-air assemblies of persons. FAA Form 7711-1 is required for any jump over or into a congested area.

(1) The drift-over provision of § 105.15 permits a jumper to exit an aircraft over areas other than a congested area and, with a fully deployed parachute, drift over a congested area or open-air assembly of persons, and then land in an open area. Under these circumstances a certificate of authorization is not required. However, the drift-over provision does not permit any jump that results in a landing into a congested area or open-air assembly of persons unless the parachutists have obtained a certificate of authorization.

(2) Operations inspectors reviewing applications for authorizations to jump into congested areas or controlled airspace should look for any indication that these jumps involve special stunts or more participants than the aircraft type certificate allows. When in doubt, coordinate with the FSDO airworthiness unit. (Further information about congested areas can be found in volume 2, chapters 102 and 120.)

D. Parachutist's Competence. The competence of parachutists is extremely important when evaluating the suitability of a landing site.

(1) Holders of USPA class D licenses have proven themselves to be highly skilled. Anyone holding a class D license who has actively participated (at least 50 jumps) in the sport within the last 12 months should be competent to participate in any jump where the separation criteria meets or exceeds that established for a level one landing area. (See paragraph 11E.)

(2) Those persons holding a USPA class D license with a current exhibition (PRO) rating have demonstrated the additional skills necessary for exhibition demonstrations in accordance with the separation criteria for a level two landing area. (See paragraph 11E.)

(3) USPA issues the PRO rating with an expiration date that coincides with the expiration date of the holder's USPA membership. USPA members are renewed on the basis of continued demonstration of the original certification requirements. USPA original certification requirements are memberships in USPA, a USPA class D license, and the accomplishment of 10 successive jumps into a 10-meter (32-foot) diameter target area in accordance with the following:

(a) all required jumps are accomplished with a stand-up landing;

(b) the size of the canopy used during the PRO rating qualification determines the smallest canopy allowed in demonstration jumps; and

(c) qualification jumps are witnessed by either a safety and training advisor or by an instructor/examiner and at least two other spectators.

E. Landing Areas. Generally, landing areas fall into one of two categories depending on the demonstrated competency of the parachutists and equipment used.

(1) *Level One Landing Area.* An open area that will accommodate a safe, generally rectangular shaped landing area no smaller than 500 by 500 feet, and up to 750 by 750 feet, with one or two adjacent sides of the rectangle used as the crowline, is a Level I landing area. The area must also permit jumpers to land no closer than 50 feet from the spectators and to pass over the spectators no lower than 250 feet, including the canopy and all external paraphernalia.

(a) Many open field athletic areas and airport operational areas constitute a Level I landing area.

(b) Minimum competency and recency of experience requirements for Level I landing areas are

at least USPA Class D license and 50 jumps within the previous 12 calendar-months, and 5 jumps within the previous 60 days on the actual canopy, or same make, model, and size of canopy to be used during the demonstration.

(2) *Level Two Landing Area.* An open area that will not accommodate a rectangular shaped landing area no smaller than 500 by 500 feet, but will accommodate a generally round or square safe landing area no smaller than 5,000 square feet per four jumpers under canopy is a Level II landing area.

(a) The area must also permit jumpers to land no closer than 15 feet from the spectators and to pass over the spectators no lower than 50 feet, including the canopy and all external paraphernalia.

(b) An athletic field 150 yards in length by 80 yards in width, or smaller with bleachers, walls, or buildings in excess of 50 feet in height on two or more sides above the landing surface, are defined as stadiums and constitute a Level II landing area.

(c) Minimum competency and recency of experience requirements for Level II landing areas are at least USPA Class D license with PRO Rating and/or members of a DOD-sanctioned parachute demonstration team and 50 jumps within the previous 12 calendar-months, and 5 jumps within the previous 60 days on the actual canopy, or same make, model, and size of canopy to be used during the demonstration. Additionally, jumpers must certify that they will use both a steerable main and reserve ram-air parachute.

(3) Other Landing Area Considerations.

(a) A landing area that exceeds the maximum dimensions of a Level I landing area, and that permits a parachutist to drift over a congested area or open air assembly with a fully deployed and properly functioning parachute (if they are at sufficient altitude to avoid creating a hazard to persons and property on the ground), and that has no other safety concerns would likely not require a Certificate of Authorization as required by § 105.15.

(b) Any parachute jumping demonstration planned in conjunction with a public aviation event such as an airshow conducted in accordance with a Certificate of Waiver or Authorization issued by the FAA will always require a Certificate of Authorization with appropriate special provisions as required by § 105.15 even if the landing area exceeds the maximum dimensions for a Level I area. A parachute jumping demonstration planned in conjunction with a public aviation event is one that takes place any time after the first spectator arrives for the event that day.

F. Alternate Landings Areas. Regardless of the parachutists' experience, there must be identified "runoffs" or escape areas.

G. External Paraphernalia. Parachute teams occasionally use smoke canisters, weighted flags, and other paraphernalia attached to the jumper's boots and to long ropes attached to the jumpers. The attaching ropes are often long enough to cause a hazard to the crowd. The proximity limitations described in paragraph 11E include all attached paraphernalia. Each jump team leader should inspect every jumper to ensure that the pyrotechnics and other paraphernalia are securely attached so inadvertent dropping is prevented. Cutaway acts may not be performed if cutaway equipment will drift into the spectator area.

12. TEMPORARY AEROBATIC PRACTICE AREAS.

A. Additional Waiver. During the airshow season, the FSDO may be called upon to issue a waiver for the establishment of a temporary aerobatic practice area.

(1) The waiver may be suggested to the sponsor of a proposed airshow at the same time the application for the airshow waiver is submitted.

(2) This additional waiver must be requested and prepared for the specific purpose of providing a temporary area in which only airshow performers may practice their routines before and during the airshow. In addition, it will provide a safe and approved area for those performers who may be from other states or countries and who need to adapt to the weather and altitude conditions intrinsic to the local area.

(3) Although this will be a separate waiver which becomes effective 2 or 3 days before the airshow, it must be prepared so as to terminate on the same date and time as the airshow waiver.

B. Establishment of Temporary Practice Areas. Some of the parameters the inspector may wish to consider in the establishment of a temporary practice area are as follows:

(1) The actual airshow site may be suitable as a temporary practice area if it is a controlled environment and there will be no conflict with other nonparticipating aircraft. The times of effectivity must be thoroughly coordinated with the pertinent air traffic facilities before approval and issuance of the waiver.

(2) The temporary practice area should be established no more than 20 or 30 miles from the actual airshow site.

(3) All of the coordination required for the establishment of a (regular) aerobatic practice area

should also be used in the preparation of the temporary aerobatic practice area. (See volume 2, chapter 48.)

(4) The sponsor must control access to the temporary aerobatic practice area, and only those persons performing in the airshow should be permitted to use the area.

(5) The physical parameters of the temporary practice area should be large enough to encompass all of the maneuvers that will be performed in the actual airshow.

(6) The responsibility for site selection, coordination, approvals, application, and oversight of the temporary aerobatic practice area rests solely with the airshow sponsor/applicant.

C. Established Practice Areas. The International Council of Air Shows (ICAS) will maintain a current listing, prepared by the ICAS staff (phone number (703) 779-8510), that delineates established waived aerobatic practice areas which may be used for performer practice with the concurrence of the waiver holder. It is the responsibility of the airshow sponsor to coordinate the use of these established practice areas. If no site is available, it is incumbent upon the airshow sponsor to request a temporary aerobatic practice area, or the IIC preparing the airshow waiver may wish to suggest that one be established.

13. REVIEW OF FAA FORM 7711-2. Upon receipt, the application should be reviewed for obvious discrepancies. If discrepancies exist, a meeting with the applicant is helpful in resolving them to mutual satisfaction. The information submitted by the applicant on FAA Form 7711-2 MUST NOT be altered by the FSDO.

A. Items 1 and 2. If the applicant represents an organization, the organization's name should appear in Item 1. The name of the individual and his/her position or authority to represent the organization (i.e., the "responsible person") should appear in Item 2. If the applicant is not representing others, "N/A" should be entered in Item 1 and the applicant's name entered in Item 2. A responsible person is one who has demonstrated to the FAA through his/her practical experience, that they are competent to conduct the event safely.

B. Item 4. The applicant may not know, or may be unsure, which sections of the regulations are involved. A conference with the applicant before acceptance of the application may be necessary. An application for a parachuting operation should state that authorization is requested in accordance with § 105.15.

C. Item 5. It is sufficient for the applicant to use the terms airshow, parachute demonstration jump, or air race to describe the events.

D. Item 6. Most events are held at, or immediately adjacent to, an airport. An increasing number, however, are held offshore, over water, in the vicinity of state fairgrounds, or at other locations. The applicant should describe the operating area as a cubic or cylindrical cell of airspace; e.g., a rectangle bounded by a runway or other definable geographical reference, a lateral point, and up to a particular altitude above ground level.

(1) For off-airport sites, the boundaries should be described using rivers, roads, or other easily identifiable landmarks.

(2) For an airshow or air race, the applicant must attach current, properly marked charts, maps, drawings, or photographs of the area of operation (not required for parachute demonstration jumps at airshows). The IIC should recommend that the applicant use the 7.5 minute series Topographic Quadrangle Maps, published by the U.S. Geological Survey (scale 1:24,000). Any depiction submitted must include scale indications of the crowd lines, show lines, race courses, the location of the aviation event control point, police dispatch, ambulance, and fire fighting equipment. The applicant may also submit current photographs and scale diagrams to assist the FAA's evaluation of a particular site. Airport master plan charts may be useful for this purpose.

(3) Applicants should note in Item 6 if supplemental information is attached.

(4) For parachute jumps not in conjunction with an airshow, the applicant should submit a current map in sufficient detail and scale to clearly depict both the area over the selected exit point and the intended landing area. However, winds during the event dictate the actual exit point. The intended landing area should be designated, and the applicant must depict areas over which jumpers cannot exit relative to their ratings.

E. Item 7. Inspectors can eliminate the need for sponsors to resubmit applications for an additional authorization by advising sponsors to list alternative dates on the initial application. This avoids confusion and reduces the number of applications that must be submitted by the sponsor.

F. Item 8. When an application is submitted, the applicant may not know the names of the performers and the aircraft to be used in a show or event. The application may be accepted with a notation in Item 8 that a list will be provided at a later, specified date and time. Once the list has been supplied, last minute

substitutions must show proof of appropriate qualifications to the IIC at the event.

G. Item 9. Not every event is sponsored by an organization. Any individual may sponsor an event.

(1) The FAA's concern is not the sponsor's identity but the measures needed to guarantee a safe operation.

(2) While the applicant assumes responsibility for the terms of the waiver or authorization, the applicant may not have the operational expertise to ensure compliance with the specified conditions of the waiver or authorization. Under these circumstances, the applicant must designate a person with the necessary background and experience to ensure operational safety as a condition for the issuance of the waiver or authorization.

H. Item 11. There is no specific requirement for the use of uniformed police or security guards. The need for policing depends upon several factors.

(1) If fencing is used for crowd control, there may be little need for crowd control personnel. However, if the sponsor intends to merely rope off the primary or secondary spectator areas, it may be necessary to have crowd control personnel.

(2) With respect to crowd control, it is not the FAA's responsibility to control the crowd or to decide who can police a show.

(3) It is the applicant's responsibility to ensure that all reasonable efforts are made to confine spectators to the spectator areas.

(a) *No unauthorized persons are allowed under the aerobatic maneuvering area.* Authorized persons will be kept to a minimum, and the authorization for each person forward of the crowd line must be justified.

(b) If reasonable efforts have been made to keep the area clear and unauthorized persons or vehicles enter the area under the aerobatic maneuvering area, efforts must be made to remove them.

(c) Sponsors, performers, and FAA inspectors shall use good judgment when determining whether it is necessary to halt a show to protect nonparticipants on the ground.

(4) Transition over a road below or adjacent to the aerobatic maneuvering area is the same as egress or ingress over congested areas. If a road runs beneath the aerobatic maneuvering area and is not patrolled, motorists could attempt to park on the shoulders to enjoy the show. In this situation, the applicant should

arrange to have the traffic controlled and directed to a safe location.

(a) There is no requirement for termination of an airshow aerobatic maneuver at a given distance from a road; but, as with a congested area, aerobatic maneuvers shall not be performed over roads unless the road or highway has been closed and no persons are allowed to park along the road.

(b) Roads under the aerobatic maneuvering area(s) will be closed to nonparticipants when the waiver is in effect.

(5) If there are buildings below the airspace where aerobatic maneuvers are performed, the sponsor must make every reasonable effort to evacuate such buildings during the event. If persons re-enter the buildings, efforts should be made to re-evacuate them. Members of the public are not allowed in buildings under the aerobatic maneuvering area.

(6) If a show or act cannot be altered to fit within FAA distance criteria, or if congestion or new development around the proposed site impedes that criteria, the site is probably not acceptable for an airshow. Sites with more than one primary spectator area can be particularly difficult to accommodate.

I. Item 12. Emergency facilities have caused problems for sponsors. As previously noted, the application serves as an all-purpose form and contains items that may or may not be appropriate to emergency facilities. Some applications have been denied because the boxes for physician, ambulance, and fire truck were not filled in. Every airshow sponsor should be encouraged to provide emergency medical service even though this service may not be called into use. Many sponsors prefer to have the local fire department's emergency rescue squad, paramedics, or emergency medical technicians at their show rather than a physician. The following guidelines are usually adequate.

(1) *Physician.* Except for events that are a great distance via a ground vehicle from a hospital or medical clinic, a rescue squad, paramedics, emergency medical technicians, or a first-aid station may substitute for a physician.

(2) *Ambulance.* If a rescue squad is provided, an ambulance should also be provided. If there is a physician in attendance, any vehicle acceptable to the physician for emergency transportation is sufficient. Many communities rely on a sheriff's or local law enforcement officer's vehicle for ambulance service. It would be improper to prohibit use of a similar vehicle to serve as an ambulance for the event.

(3) *Fire Truck.* For the most part, the only reason for having a fire truck at an aviation event is for

the performers' benefit. If the performers are willing to accept a pickup truck with hand-held fire extinguishers, the FAA should not demand that the sponsor provide a fire truck with trained firemen.

(4) *Crash Wagon.* Many event locations do not have crash wagons available. If they are not available, the FAA should not require a sponsor to obtain a crash wagon from a distant facility.

(5) *Other.* The following is an example of how the OTHER block might prove useful. At one event, the sponsor had a helicopter and pilot continually ready for emergency transportation of spectators or performers who might need medical attention during the events. A military trained firefighter and medic were standing by the helicopter with extinguishers in case of an aircraft accident anywhere in the operating area. Describing this OTHER emergency equipment could have relieved the applicant from having to show anything in the preceding blocks.

(6) Aerobatic school activities or aerobatic meets that are not airshows, contests, or races may require a waiver. If these activities are not advertised as aviation events, it may not be necessary for the school or sponsor to provide policing or emergency facilities. (See volume 2, chapter 48.)

J. Item 13. Potential communication contingencies should be entered in this block. Examples of these follow.

(1) Although every aircraft in the event may be equipped with a two-way radio, a visual ground-to-air emergency signal must be provided and described in the application.

(2) If an airport that is the site of an aviation event is served by a scheduled air carrier, arrangements must be made for the arrival and departure of such aircraft. It is usually adequate to schedule a break in the activities to allow for scheduled arrivals and departures. Prior coordination with the air carrier should be completed by the sponsor.

K. Item 14. The FAA must see a schedule of events in order to evaluate the application. For the purpose of reviewing the application, the schedule does not need to be detailed. It should contain at least a general description of the types of events and their sequence in the show.

(1) The applicant must specify a date and time before the show when he or she will provide a schedule of events. The schedule must identify the aircraft and performers in the sequence of appearance. This list becomes a part of the official waiver or authorization package. During the event, the scheduled

order of appearance may change because of weather, mechanical problems or other factors.

(2) Any demonstration added to the schedule requires FAA approval, and should be submitted at the earliest opportunity. Cancellation of events does not

require advance notice. If the sponsor wants to add additional performers after he or she has submitted the final list of participants, pen and ink changes may be approved by the IIC.

TABLE 1

AIRCRAFT/ SHOW LINE CATEGORY	AIRCRAFT CHARACTERISTICS*	STANDARD SHOW LINE DISTANCE FROM THE SPECTATOR AREA
I	More than 245 knots (282 mph)	1,500 feet
II	More than 156 knots but 245 knots or less (181-282 mph)	1,000 feet
	Aerobatic helicopters	1,000 feet
III	156 knots or less (180 mph)	500 feet
III	Any single-engine, normally aspirated or fuel-injected, reciprocating-engine airplane with a maximum certificated gross weight of no more than 2,250 lbs. Aerobatic gliders (sailplanes), ultralights, and gyrocopters	500 feet
III	Nonaerobatic aircraft, rotorcraft agility maneuvers, (any nonaerobatic flyby demonstration)	500 feet
III	BD-5J Microjet	500 feet
N/A	Rocket backpack	250 feet

* These are not operating limitations

14. STANDARD LIMITATIONS. Evaluation of the proposed site determines the actual separation requirements. The following MINIMUM distances and standard limitations apply to *all* aerobatic demonstrations and must be observed.

A. Show lines and Spectator Areas. Pilots performing flight demonstrations must maintain minimum distances from the primary spectator area.

(1) For aerobatic and other flight demonstrations, show lines must be established at prescribed minimum distances from the designated spectator area. These show lines are used as a reference by performing pilots or, in the case of a formation flight, by the formation leader. Flight demonstrations must not cross over these show lines toward the primary spectator area.

(2) For formation flight demonstrations, the formation leader must adjust his/her ground track so that the critical wingman remains beyond the appropriate show line.

(3) For reciprocating-engine powered airplanes and certain other Category III aircraft, these minimum distances are predicated on true airspeed in straight and level flight at 75 percent power at standard temperature and pressure (15°C/sea level) and maximum certified gross weight.

(4) For turbine engine powered airplanes, the distances are based on 85 percent of the maximum continuous powered straight and level flight true airspeed at standard temperature, pressure, and maximum certified gross weight.

(5) With the exception of the BD-5J, any turbine engine powered airplane for which bonafide performance data acceptable to the FAA is not available will be required to perform on or beyond the Category I show line.

(6) Show line categories, speeds, and distances are shown in Table 1 above. These speeds are only for determining assignment to a show line, not maximum performing speeds.

B. Establishment of Show lines. As described in Table 1, three different show lines might be required when all three categories of aircraft are participating at a show site.

(1) The show lines should be established first, rather than establishing the spectator areas and then determining the show lines.

(2) The optimum situation is when prominent show lines such as runway centerlines, treelines or other geographical features are 500, 1,000, or 1,500 feet from the spectators. These distances from the show lines to the spectators for each category of aircraft are the standard; however, under some conditions the distances may be altered. Subparagraphs C and D below define the limitations for these alterations. Consideration for moving show lines are as follows.

(a) If the runway centerline used for a show line is located closer to, or farther from, the spectators than that prescribed for a particular category of aircraft, the show line may be moved. Because a runway is well-defined, at times it is more desirable to use a runway as a show line rather than use a show line that is not well-defined. Only if safety is enhanced by using the well-defined show line, the location of the show line may be altered. This alteration is not to be made as a means of increasing the spectator area or moving the show line closer to the spectators.

(b) Antennas, windsocks, treelines, and other obstacles that are hazards to the performers often necessitate moving a show line; even in these cases, the show line may not be moved any closer than the prescribed altered minimums.

(3) The minimum 500-foot show line for Category III aircraft shall not be waived.

(4) It is vitally important that all show lines be adequately delineated, to include appropriate vertical development. For North American military jet teams, both the Category I and Category III show lines must be discernible at least 2 miles from show center at an altitude of 200 feet.

C. Category I Show lines. The optimum show line distance from the spectator areas for Category I aircraft shall be 1,500 feet or greater (figure 49-14).

(1) If the ONLY well-defined show line is closer than 1,500 feet to a spectator area and it is not possible to move the spectator area, the show line may be approved down to a minimum of 1,200 feet.

(2) When there is a reduction in the distance from the show line to the primary spectator area, a similar reduction shall not be permitted for the

secondary spectator area side of the show line (figures 49-15 and 49-16).

(3) In no case shall there be less than 2,700 feet between the primary and the secondary spectator areas.

(4) Also, it is important for Category I show lines to be well marked.

D. Category II Show lines. The optimum show line distance from spectator areas for Category II aircraft is 1,000 feet or greater.

(1) If the ONLY well defined show line is closer than 1,000 feet to a spectator area and it is not possible to move the spectator area, the show line may be approved down to an absolute minimum of 800 feet (figure 49-17).

(2) When there is a reduction in the distance from the show line to the primary spectator area, a similar reduction shall not be permitted for the secondary spectator area side of the show line.

(3) In no case shall there be less than 1,800 feet between the primary and the secondary spectator areas.

E. Category III Show lines. The show line shall not be closer than 500 feet from the primary or secondary spectator areas (figure 49-18).

(1) The 500-foot show line may also be used for Category I or II aircraft being flown nonaerobically and parallel to the primary and/or secondary spectator area. In this case, the show line must be clearly delineated for high performance aircraft.

(2) A circular arc directed away from the crowd, a pass in review maneuver, may be flown provided the aircraft remain at least 500 feet from the primary and secondary spectator areas.

(3) If there is less than 1,000 feet between the primary and any secondary spectator areas, the site cannot be considered for an airshow waiver.

(4) If there is less than 500 feet between the show line and the spectators, the site cannot be considered for an airshow waiver.

(5) Nonaerobic formation leaders must adjust their ground track so that the critical wingman is not closer to the spectator area than the Category III show line.

F. Aerobatic Formation Flight. Formation aerobatics may be performed only if the following conditions are met.

(1) The members of the aerobatic team must have performed together in 10 aerobatic performances over the preceding 12 months; or

(2) The team members must be able to document 30 aerobatic practice sessions as a team over the preceding 12 months in performing aircraft type; and

(3) All persons conducting formation aerobatics must have demonstrated or substantiated their skills and have the "Formation Aerobatics" notation placed on their Statement of Acrobatic Competency, FAA Form 8710-7 or TCA Form 26-0307 as described in paragraph 15E(1).

G. Nonaerobatic Formation Flight. Civil pilots who wish to conduct nonaerobatic formation flight in waived airspace for an airshow must possess a valid industry formation training and evaluation credential that is acceptable to AFS-800.

(1) Any industry credential will suffice for any type airplane. This policy does not apply to closed course air racing, "dog fighting," or skywriters when skywriting.

(2) An appropriately rated instructor or experienced industry formation instructor/proficiency pilot shall be onboard the aircraft when the pilot does not

have previous formation/airshow flying experience and/or an appropriate authorization issued in accordance with an industry training program, or the aircraft may fly in loose "trail" formation.

(3) It is incumbent upon the sponsor to determine compliance with an industry program and/or the airman experience requirements and provisions below.

(4) As such, impromptu formation flying at aviation events is not authorized.

(5) The following conditions must be met.

(a) The aircraft must be equipped with fully functional dual controls and intercom system. If the aircraft requires a second-in-command (SIC), the instructor/proficiency pilot may occupy the jump seat.

(b) The sponsor must be aware of, and consent to, the instructor/proficiency pilot's participation.

(c) The instructor/proficiency pilot must be rated and current in the make, model, and type of aircraft, and be experienced and current in airshow and formation flying.

(d) Aerobatic flight is not to be conducted.

TABLE 2

AIRCRAFT OPERATING CHARACTERISTICS	MINIMUM DISTANCE BETWEEN SPECTATOR AREA AND TAKEOFF/LANDING SURFACE
Category I aircraft conducting an aerobatic maneuver on takeoff*	1,500 feet for takeoff
Category II aircraft conducting an aerobatic maneuver on takeoff*	1,000 feet for takeoff
Category III aircraft conducting an aerobatic maneuver on takeoff*	500 feet for takeoff
Aircraft with V_{ref} in excess of 100 knots	500 feet for takeoff and landing
Aircraft with certificated gross weight in excess of 50,000 lbs.	500 feet for takeoff and landing
Aircraft conducting excessive, nonaerobatic maneuvering on takeoff (comedy acts)	500 feet for takeoff and landing
Aircraft with V_{ref} of 100 knots or less AND certificated gross weight of 50,000 lbs. or less	300 feet for takeoff and landing
All aircraft and ultralights in show have V_{ref} of 60 knots or less AND a certificated gross weight of 2,500 pounds or less	200 feet for takeoff and landing

TABLE 2 - Continued

AIRCRAFT OPERATING CHARACTERISTICS	MINIMUM DISTANCE BETWEEN SPECTATOR AREA AND TAKEOFF/LANDING SURFACE
Sailplanes	200 feet**; 150 feet if angled away 10°**
Performing Rotorcraft	Engine start and shutdown - 200 feet; takeoff and land - 500 feet; hover taxi in between
Rocket Backpack	250 feet for takeoff and landing

*Note 1: See Table 1

*Note 2: If takeoff runway is closer to spectator area than the appropriate show line, aircraft can commence an aerobatic maneuver on takeoff after passing the end of the spectator area or after turning away from the spectator area and crossing the appropriate show line.

**Note 3: See paragraph 14K.

H. Takeoff and Landing Areas.(Table 2)

(1) When the takeoff runway is separated from the primary or secondary spectator areas by less than 500 feet for Category III, 1,000 feet for Category II, and 1,500 feet for Category I aircraft, no aerobatics are permitted until the aircraft passes the end of the spectator area and then only if there is no congested area or spectators below that aircraft. An aerobatic maneuver may be performed after takeoff when the aircraft has turned away from the spectator areas and crossed the appropriate show line. (See figures 49-19 and 49-20 for Category III aircraft example.)

(2) Spectator areas may not be closer than 500 feet to any takeoff and landing runway when the approach speed (V_{ref}) of any aircraft exceeds 100 knots (figure 49-21). Additionally, aircraft that have a certificated gross weight of more than 50,000 pounds shall be required to use a runway that is at least 500 feet from spectators.

NOTE: This distance can be measured to the runway centerline for single aircraft operations conducted on the centerline. If measuring to the centerline, single aircraft must takeoff and land on the centerline. This distance shall be measured to the runway edge for other than in-trail formation operations.

(3) Aircraft with both an approach speed (V_{ref}) of 100 knots or less and a certificated gross weight of 50,000 pounds or less shall be required to use a runway that is at least 300 feet from the spectator area.

(4) The “flying farmer” or similar comedy routines that involve excessive nonaerobatic maneuvering immediately after takeoff or just before landing

must also be separated from the spectator area by at least 500 feet (figure 49-21).

(5) If ALL aircraft in an airshow have approach speeds (V_{ref}) of less than 60 knots, and certificated gross weight of less than 2,500 pounds, and there is no excessive maneuvering during takeoff or landing, spectators may be as close as 200 feet to the takeoff or landing runway (figure 49-22).

(6) These distances shall be measured to the runway centerline, except for formation takeoff/landing operations, which should be measured to the runway edge. Single aircraft operations shall use the runway centerline.

(7) Rotorcraft aerial acts shall begin and terminate the act from a position on the ground at least 500 feet from spectators. Engine start-up/shutdown shall occur at a point no closer than 200 feet from the spectators. Rotorcraft may hover taxi in ground effect between the takeoff/landing areas and the start-up/shutdown area at the speed of a brisk walk.

I. Engine Run Areas. Areas must be at least 100 feet from the spectator area, and areas where rotors are turning must be at least 200 feet from the spectator area. Barriers protected or guarded by wing-walkers, marshallers, AND crowd control monitors that prevent entry by unauthorized personnel into areas where engines are running and/or propellers are turning, must be 50 feet from the spectator area.

J. Rotorcraft Takeoff and Landing Areas. During some airshows, helicopters take passengers for rides or serve as emergency vehicles. The landing and takeoff areas used by these rotorcraft should be enclosed in a

manner that prevents unauthorized persons from entering the landing and takeoff area.

(1) The pads should be located so the aircraft do not pass over spectator areas during takeoff or landing.

(2) The sponsor must establish a flight area and procedures that will not interfere with performers.

(3) Performers must be consulted to ensure that these operations do not pose any hazard to their operations. Generally, helicopter operations should not be permitted during military jet team performances.

(4) Helicopter Emergency Medical Service operations must not endanger spectators, regardless of the emergency nature of those operations.

K. Sailplane Operations. Airshow aerobatic demonstrations with sailplanes are becoming more numerous. Sailplanes are less hazardous than powered aircraft; they do not have engines and propellers nor do they carry flammable liquids. For these reasons, the following criteria apply *only* to sailplane operations.

(1) Sailplanes fall into the Category III aircraft group. Category III show line and performance distances apply.

(2) Because of the need for a tow by either an airplane or a car, taxiways are often used for takeoff. This is often advantageous since it allows the towplane, the towline, and the sailplane to be positioned without affecting the operation of powered aircraft or congesting the active runway. Unless obstructions are present that would make a taxiway takeoff unsafe, it should be permitted with a minimum distance of 200 feet from the primary spectator area (figure 49-23). This distance may be reduced to 150 feet if the takeoff path, beginning at or near the center of the spectator area, is at an angle of at least 10° away from the spectators (figure 49 -24).

(3) Landings may be approved on the taxiway used for the takeoff as long as there are no obstructions or adverse wind conditions that would create a hazard to the spectators. If the landing approach requires a low altitude turn over the spectators, landing on a taxiway is not permitted. After landing, the aircraft must come to a full stop at least 50 feet from spectators.

L. Aerobatic Demonstration Area Considerations.

(1) Many terms have been used to describe the area where aerobatics are performed during an airshow, such as aerobatic demonstration areas, flight maneuvering areas, aerobatic boxes, and aerobatic/flyby areas. They all convey approximately the same

meaning. Nonparticipants are not permitted under this area when the waiver is in effect.

(2) A Certificate of Waiver or Authorization, FAA Form 7711-1, issued to an airshow sponsor by the FAA, specifies a geographic area, both lateral and vertical, where demonstrations are authorized. This area could be quite large (e.g., 10 NM radius of an airport from the surface up to 15,000 feet MSL) or rather small (e.g., 2 NM radius up to 3,000 feet MSL), depending on the type of aerial demonstration planned.

(3) In determining where aerobatics will be performed within the geographic area specified on FAA Form 7711-1, the sponsor selects a site which will accommodate all the specific types of aerial demonstrations without derogating safety or creating a hazard to any nonparticipants or spectators. It is imperative that all areas adjacent to the show site containing homes, factories, major highways, travelled thoroughfares, or any occupied vessel, vehicle, or structure, be carefully evaluated before making a final decision for site selection.

(4) The area should be specified on a map, chart, diagram, or other data submitted by the airshow sponsor with the Application for Certificate of Waiver or Authorization for an aerobatic demonstration. Considerable planning by the FAA and show sponsor go into developing appropriate show lines and primary/secondary spectator viewing areas to ensure compliance by the participants and adherence to the Certificate of Waiver or Authorization and the standard and special provisions by the show sponsor.

(5) However, there may be instances when a modification to the aerobatic demonstration area may be necessary for a particular performance, unexpected site problems, weather conditions, geographic conditions, environmental conditions, or any other situation where the modification of the site could enhance safety and event operations. Demonstrations may be authorized outside a previously mutually agreed upon aerobatic demonstration area when the following conditions are met:

(a) The performer is able to comply with all regulations, all special provisions of the waiver, and any/all pilot and aircraft limitations.

NOTE: Section 91.303(a) and (b), Aerobatics over Congested Areas and Open Air Assemblies of Persons, is never waived.

(b) The airshow sponsor complies with all general and special provisions such as halting the demonstration when unauthorized persons, vehicles, or aircraft enter the demonstration area.

(c) The airshow sponsor has received the concurrence of the IIC for the site modification, which should not be unreasonably withheld if conditions (a) and (b) are met.

15. SPECIAL PROVISIONS. Special provisions are conditions, requirements, or limitations necessary to protect nonparticipating persons and property on the surface and other users of the national airspace system. Each Certificate of Waiver or Authorization must include special provisions as determined by the issuing FSDO.

A. Applicability. Many safety provisions are general in nature and are applicable to most aviation events. Other provisions may apply only to certain types of events. Provisions that appear on the waiver or authorization should be restricted to protective measures, controls, or requirements that are not otherwise specified by the regulations. Regulatory requirements that are not waived should not be included as special provisions. Waiver provisions never supersede aircraft airworthiness operating limitations.

B. Ensuring Safety. The special provisions ensure that the event can be conducted without an adverse effect on safety. Every waiver/authorization shall contain special provisions to ensure an equivalent level of safety with the rules that are waived for the nonparticipating public and nonparticipating air traffic.

C. Use of Special Provisions. Some events require extensive and highly detailed special provisions, whereas the special provisions for other events can be less detailed. In addition to variation among events, local conditions may have a significant impact on the necessary special provisions.

(1) Special provisions may pertain to associated protective measures and control requirements that may not be specifically covered by the regulations. In addition, it may be necessary to increase one regulatory minimum in order to authorize safe deviation from another. For example, in order to permit aerobatic flight in Class D airspace, it might be necessary to increase the minimum visibility requirement to 5 miles or some other appropriate value.

(2) When applicable, IIC's should insert the name of the responsible person, found in Item 2 of the application, into the text of the special provisions to indicate the holder of the Certificate of Waiver or Authorization.

(3) The provisions should be typed with as little editorial change as possible onto the Certificate of Waiver or Authorization form or on attached pages. Numbers and language can be inserted or changed to suit each event only when necessary, appropriate, and

in accordance with the guidance in this handbook. Editorial comments enclosed in brackets, [], should not be included on the certificate. When justified by local conditions special provisions can be more restrictive.

D. Examples of Common Special Provisions. Each of the following common special provisions should be included on every Certificate of Waiver or Authorization.

(1) [Insert name of responsible person] shall retain sole responsibility for safeguarding persons and property on the surface and shall inform the [issuing] FSDO in writing of the person named to ensure safety of the event.

(2) Mr./Ms. [insert name] has been determined to be competent and knowledgeable concerning the terms and provisions of this Certificate of Waiver or Authorization and the aviation event governed by it. Mr./Ms. [insert name] will be responsible to the FAA for the safe conduct of the event.

(3) [Insert name of responsible person] shall ensure that participants are thoroughly briefed on special field rules, manner and order of events, and are available for briefing on the provisions of the waiver(s) or authorization(s) before beginning the activities. No person may participate in any event unless that person has signed a statement stating that they have received a briefing on the provisions of the waiver(s) or authorization(s). Teams may be represented by one performer.

(4) [Insert name of responsible person] shall notify the [insert name] FAA Flight Service Station of the date, time, place, areas, altitudes, nature of the activity, and duration of the operation and request that a Notice to Airmen (NOTAM) be issued. Such notice shall be accomplished by providing the controlling flight service station (FSS) with a copy of the Certificate of Waiver or Authorization at least 48 hours before the event and no more than 72 hours before the event.

(5) All civil aircraft and pilots participating in the demonstration shall be available for FAA inspection at [state time and place].

(6) For civil aircraft, only required flight crewmembers by type design or those persons required to participate in the demonstration (wingwalkers, stunt persons, actors integral to the performance, and those conducting safety related functions) will be carried on any aircraft engaged in demonstrations authorized by this waiver or authorization.

(7) Failure to comply with any standard or special provision is a violation of the terms of this

Certificate of Waiver or Authorization and justification for cancellation of this Certificate and constitutes a violation of Title 49 of the United States Code (49 U.S.C.) section(s) 44711(a)(2)(B) and/or 44711(a)(5).

(8) The FAA has the authority to cancel or delay any or all acts or events if the safety of persons or property on the ground or in the air are in jeopardy, or there is a violation of the terms of the waiver or authorization.

(9) Persons or aircraft not appearing on the waiver or authorization application and subsequently added to the Certificate of Waiver or Authorization may not participate without specific approval by the FAA.

(10) No demonstrations shall be authorized or scheduled when a suspension of airport traffic or diversion of other aircraft traffic would cause a hardship to schedule air carrier operations.

(11) The distance from clouds requirements of 14 CFR § 91.155 are not waived.

(12) Regardless of any altitude restriction imposed by the terms and conditions of the Certificate of Waiver, civilian flying performers who do not hold a FAA Form 8710-7 or TCA Form 26-0307 with a Level 1 altitude authorization may conduct one photo pass no closer than the Category III showline. Ingress/egress shall be no closer than 500 feet laterally to the ends of the primary spectator area. Also, civilian performers who do not hold a FAA Form 8710-7 with a Level 1 altitude authorization may conduct a photo pass no lower than 50 feet AGL when operating on or beyond the Category III showline. The single photo pass must generally be conducted in steady state, level pitch attitude, non-maneuvering flight not to exceed 75° of bank. The 50 foot AGL, aircraft attitude, and steady state maneuvering restrictions do not apply to military performers, and/or civilian performers who hold a valid FAA Form 8710-7 or TCA Form 26-0307 with Level 1 authorization.

E. Examples of Low Level Aerobatics Special Provisions. As appropriate, include the applicable special provisions with the provisions in paragraph 15D of this section when aerobatics will be performed contrary to § 91.303(a) through (f).

(1) All civil pilots who perform aerobatics must possess a valid FAA Form 8710-7 or TCA, Form 26-0307. All limitations on the form will be adhered to including altitude restriction for the entire performance. Upon request of the FAA, they must show evidence of performing or practicing their performance(s) within the previous 90 days. Pilots who wish to conduct nonaerobatic formation flight at

an airshow must possess a valid industry formation training and evaluation credential acceptable to the FAA.

(2) For the purpose of this event, the definition of aerobatic flight contained in § 91.303 is waived. The following guidelines apply in determining what maneuvers are considered aerobatic.

(a) An intentional maneuver in which the aircraft is in sustained inverted flight, or is rolled from upright to inverted or from inverted to upright is considered aerobatic flight.

(b) The following aircraft attitudes will be considered aerobatic flight:

i. For civil turbojet/turboprop powered (primary power unit) airplanes, when the pitch angle exceeds a positive or negative 60° angle from the horizon, and/or when the bank angle diverges from level flight in excess of 60°.

ii. For all other aircraft, when the pitch angle exceeds a positive or negative 90° angle from the horizon, and/or when the bank diverges from level flight in excess of 90°.

(c) All standard airshow aerobatic maneuvers such as slow rolls, snap rolls, loops, Immelmans, Cuban eights, spins, hammerhead turns, etc., are considered aerobatic flight.

(d) Steeply banked (90° or less), level, climbing, or descending turns necessary for maneuvering back to the aerobatic area and/or show center between aerobatic maneuvers are not considered to be aerobatic flight.

(e) For civilian performers that have FAA approved maneuvers packages, and for performers in North American Military Units that have FAA accepted maneuvers packages, positioning turns are not considered airshow aerobatic maneuvers regardless of the angle of bank or pitch attitude, but only as necessary to complete the turn.

(f) Maneuvers such as steep turns in air racing are not considered aerobatic flight.

(3) A control point shall be established where the certificate holder or representative shall direct the demonstration. This person shall be continuously available to the FAA and is the person designated as responsible for the overall safety of the event.

(4) A show line or show lines (man-made or natural) clearly visible to the performers/pilots shall be provided to assist them in compliance with the approved distances from the spectator area(s). The show line(s) will include a visible show center marker.

(5) Except when authorized during takeoff or landing, aircraft that operate at speeds of 156 knots or less and certain other Category III aircraft shall perform no closer than 500 feet horizontally from the spectator area[s]. The show line[s] for these aircraft [is/are] defined on attachment #[insert number]. Notwithstanding the speed capability of BD-5J airplanes, they may perform aerobatically no closer than 500 feet horizontally from the spectator area[s]. (The attachment should distinctly depict and describe the show line(s) and show center.) Any single-engine, normally aspirated, fuel-injected, reciprocating-engine airplane with a maximum certificated gross weight of no more than 2,250 lbs. is also a Category III aircraft.

(6) Except when authorized during takeoff or landing, aircraft that operate at speeds of more than 156 knots but 245 knots or less shall perform aerobatic maneuvers no closer than 1,000 feet horizontally from a single spectator area. If two spectator areas are used, the show line may be no less than 800 feet from the primary spectator area and no less than 1,000 feet from the secondary spectator area. The show lines for these aircraft [is/are] defined on attachment #[insert number]. (The attachment should distinctly depict and describe the show line(s) and show center and specify the actual distances approved).

(7) Except when authorized during takeoff or landing, aircraft that operate at speeds of more than 245 knots shall perform aerobatic maneuvers no closer than 1,500 feet horizontally from a single spectator area. If two spectator areas are used, the show line may be no less than 1,200 feet from the primary spectator area, and no less than 1,500 feet from the secondary spectator area. The show line[s] for these aircraft is/are defined on attachment #[insert number]. (The attachment should distinctly depict and describe the show line(s) and show center and specify the actual distances approved).

NOTE: For reciprocating-engine powered airplanes, these distances are predicated on true airspeed in straight and level flight at 75 percent power at standard temperature and pressure (15°C/sea level) and maximum certificated gross weight. For turbine engine powered airplanes, the distances are based on 85 percent of the maximum continuous powered straight and level flight true airspeed at standard temperature, pressure, and maximum certificated gross weight. Any turbine engine powered airplane for which bonafide performance data acceptable to the FAA is not available will be required to perform on or beyond the Category I show line.

(8) Nonaerobatic fly-bys may be conducted no closer than 500 feet horizontally from the spectator areas for all aircraft.

(9) Supersonic and/or trans-sonic speeds are prohibited.

NOTE: This special provision should only be included if an aircraft scheduled in the event is capable of operating at supersonic and trans-sonic speed.

(10) Adequate communication capability (electronic and visual) must be provided to maintain a safe operation, to control spectators, and to advise participants that the aerial demonstration has been halted or canceled.

(11) A crowd line consisting of a physical barrier and/or adequate policing shall be provided to confine the spectators to designated areas. The spectator areas shall have well defined lateral boundaries.

(12) The demonstration shall be halted for any reason that is in the interest of safety. It shall also be halted when unauthorized aircraft enter the airshow operations area, and/or when unauthorized persons or vehicles enter the area underlying the aerobatic maneuvering area. Only the minimum number of authorized persons necessary to support operations will be authorized in the operating areas. The holder of the Certificate of Waiver or Authorization assumes responsibility for persons who enter the operations area.

(13) Aircraft engines shall not be started and aircraft shall not be taxied in designated spectator areas or static display areas unless adequate measures are taken to protect the spectators. Areas where engines and propellers will be turning must be at least 100 feet from the spectator area and areas where rotors are turning must be at least 200 feet from the spectator area. Areas where engines and propellers are turning that are protected by a physical barrier or guarded by wing-walkers, marshallers, AND crowd control monitors that will prevent entry by unauthorized personnel, must be at least 50 feet from the spectator area.

(14) Flight demonstrations shall not be conducted unless the ceiling is at least 1,500 feet, and the visibility is at least 3 statute miles at the time of the demonstration.

(15) The FAA monitor may adjust the minimum ceiling and visibility requirements at his/her discretion, but no less than 1,000 feet and 3 statute miles if:

(a) Except for North American military performers, aerobatic maneuvers are conducted by

Category III aircraft only within an operations area having a diameter of no more than 2 statute miles; and

(b) Originally scheduled aerobatic maneuvers are not modified or conducted in close proximity to the surface as a result of the reduced weather conditions.

(16) Aircraft maneuvers may not direct energy toward any spectator area. Certain related maneuvers and procedures, however, may be authorized as outlined below.

(a) Approved maneuvers that are completed prior to reaching a point that the rollout and trajectory of the aircraft or the scatter pattern would not endanger the spectators if a catastrophic failure were to occur. Approved maneuvers are maneuvers that have been approved by AFS-800 for a specific performer and aircraft. Upon request from the FAA, performers are required to present evidence of the approval.

(b) For the U.S. Air Force Thunderbirds and/or U.S. Navy Blue Angels, approved maneuvers may include level or climbing (normal rate) nonaerobatic flight over designated spectator areas generally from front to back or back to front; however, in no case shall the altitude of the aircraft be less than 500 feet AGL over primary spectator area. All other performers must be at or above 1,000 feet AGL over primary spectator areas unless they hold approval for the maneuver from AFS-800.

(c) Maneuvers on an oblique line that pass 500, 1,000, or 1,500 feet to either side of a spectator area as appropriate to the category of aircraft being flown during oblique aerobatic maneuvers.

(17) An arrival demonstration is not authorized unless an advance member of the demonstration team has been briefed on the show line and pertinent special provisions of the waiver. This information must be relayed to the team leader before the arrival demonstration.

(18) The following facilities shall be provided and readily available at the demonstration site. [*List the emergency and medical equipment or personnel that the sponsor and the IIC have agreed are needed, and include an emergency plan.*]

(19) To alert nonparticipating aircraft, a closed field signal in the form of a large "X," which is colored aviation yellow and readily visible from 3,000 feet above the surface, must be displayed on a prominent part of the airport when the aerial demonstration is in progress. [*This closed field signal is necessary at most uncontrolled airports and airports which have only a non-Federal control tower, but is usually not required at airports which have a Federal control tower.*]

(20) [*Insert name of responsible person*] shall ensure that roads and buildings under the specified aerobatic maneuvering area are devoid of vehicular and pedestrian traffic and/or persons.

(21) Spectator areas may not be closer than 500 feet from any takeoff and landing runway when the approach speed of any aircraft exceeds 100 knots and/or for any aircraft that has a certificated gross weight of more than 50,000. Aircraft with both an approach speed of 100 knots or less and a certificated gross weight of 50,000 pounds or less shall be required to use a runway that is at least 300 feet from the spectator area. If ALL aircraft and ultralights in an airshow have approach speeds of less than 60 knots, and certificated gross weight of less than 2,500 pounds, and there is no excessive maneuvering during takeoff or landing, spectators may be as close as 200 feet to the takeoff or landing runway. The "flying farmer" or similar comedy routines that involve excessive nonaerobatic maneuvering immediately after takeoff or just before landing must also be separated from the spectator area by at least 500 feet. These distances can be measured to the runway centerline for single aircraft operations, in which case the aircraft are expected to operate on the runway centerline. For formation takeoffs/landings, this distance shall be measured to the runway edge.

(22) Aircraft equipped with operable ejection seats or jettisoned tanks must be identified as such to the event sponsor and on-site crash rescue services.

F. Examples of Helicopter Special Provisions. As appropriate, include the applicable special provisions with the provisions in paragraph 15D of this section for performing helicopter activities.

(1) Helicopters may perform aerobatic maneuvers no closer than 1,000 feet horizontally from a spectator area. These maneuvers may include a 90° pitch down, a split "S," a loop, and a barrel roll. Civil performers proposing to use these maneuvers in an airshow must produce appropriate written authorization by AFS-800.

(2) Helicopters performing aerobatic maneuvers shall have a valid and current special airworthiness certificate issued in the Experimental Category for the purpose of exhibition. Nothing contained in these special provisions shall be contrary to any operating or special limitation issued as a part of that special airworthiness certificate.

(3) Helicopters may perform agility maneuvers no closer than 500 feet horizontally from a spectator area. These maneuvers may include abrupt pedal turns, sideward and rearward flight maneuvers, out-of-ground effect hovering, continued operation in the avoid area of the height velocity diagram, and turns

not exceeding 90° of bank. All helicopter performances must terminate no closer than 500 feet from the spectator area.

(4) Helicopter takeoff and landing areas used for providing helicopter rides to the crowd must be protected in a manner that will prevent unauthorized persons from entering the helipad area. The pads should be at a location that will prevent the helicopter from passing over spectators during takeoff or landing.

G. Examples of Night Event Special Provisions. As appropriate, include the applicable special provisions in addition to the special provisions in paragraph 15D of this section for events conducted after local sunset.

(1) Aerobatic demonstrations at night shall be confined to 1 NM on either side of the show center along a well-defined, lighted show line.

(2) Aerobatic demonstrations at night shall be confined to altitudes above 500 feet AGL and below 5,000 feet AGL after official sunset.

(3) The minimum weather conditions at night require a cloud base no lower than 2,500 feet and 3 statute miles visibility.

(4) Aircraft position lights must be operating except while pyrotechnics on the aircraft are illuminated.

(5) When pyrotechnics are illuminated, operations over persons are prohibited at any altitude.

H. Special Provisions for Parachute Jumps. As appropriate, include the applicable special provisions with special provisions in paragraph 15D for parachute jumps, including tactical airborne demonstrations, that require an authorization under § 105.15. Restrictions in this section are not appropriate for parachute jumping operations not requiring an authorization under § 105.15.

(1) Except for tactical airborne demonstrations, all jumpers shall have a record of at least 50 parachute jumps in the past 12 calendar-months, 5 of which must have been made in the last 60 days.

(2) Each civilian jumper shall not exceed the manufacturer's maximum suspended weight for the parachute to be utilized in the demonstration.

(3) The holder of this Certificate of Waiver or Authorization must position at least one person on the ground in the landing area to perform ground control duties. Ground control must have and utilize a means of constant communication with the jump aircraft. Direct two-way radio shall be the primary means of communication. In the event two-way radio communication is lost, a visual means of communication must

be available that is capable of being identified and understood by the jumpers from the jump aircraft, and that will clearly indicate to jump or not to jump.

(4) Procedures shall be established and used by the holder of this Certificate of Waiver or Authorization to control spectators and keep them out of the landing area.

(5) Except for tactical airborne demonstrations, minimum competency and recency of experience requirements for Level I landing areas are at least USPA Class D license with 50 jumps within the previous 12 calendar-months, and 5 jumps within the previous 60 days on the actual canopy, or same make, model, and size of canopy to be used during the demonstration. The jumpers may exit over an open area and drift into a Level I landing area within a congested area and must land no closer than 50 feet from any spectators and to pass over any spectators no lower than 250 feet, including the canopy and all external paraphernalia.

(6) Except for tactical airborne demonstrations, minimum competency and recency of experience requirements for Level II landing areas are at least USPA Class D license with PRO rating with 50 jumps within the previous 12 calendar-months, and 5 jumps within the previous 60 days on the actual canopy, or same make, model, and size of canopy to be used during the demonstration. Additionally, jumpers must certify that they will use both a steerable main and reserve ram-air parachute. The jumpers may exit over an open area and drift into a Level II landing area within a congested area and must land no closer than 15 feet from any spectators and pass over any spectators no lower than 50 feet, including the canopy and all external paraphernalia.

(7) The holder of this Certificate of Waiver or Authorization is responsible for the overall safe execution of the jump exhibition. The final determination of site acceptability, landing area, wind conditions, and location of where to exit the jump aircraft (in accordance with the aforementioned special provisions) will be made by the team leader.

(8) With the exception of members of DOD-sanctioned teams, under no circumstances may a parachutist exit an aircraft directly over a spectator area or open air assembly of people.

(9) The parachute jumps shall be from [*insert altitude*] feet MSL and below.

(10) With the exception of DOD-sanctioned teams and tactical airborne demonstrations, parachutists shall deploy their parachutes at an altitude of not less than 2,000 feet AGL.

(11) The decision to integrate Canopy Relative Work (CRW) into the parachute demonstration will be the responsibility of the team leader. The team leader will determine the effects of wind speed, direction, and turbulence when determining whether CRW can be conducted safely. This includes the decision to fly a completed formation over a spectator area or open air assembly of people. With the exception of DOD-sanctioned teams, CRW formations comprised of all USPA PRO-rated jumpers and any two jumper formation, CRW formations will not be flown below 1000 feet AGL for Level II landing areas, and 500 feet AGL for Level I landing areas.

(12) With the exception of DOD-sanctioned teams, no hook turns will be initiated below 200 feet AGL.

NOTE: A hook turn is a maneuver in any maneuver sequence that causes the canopy to roll at an angle in excess of 45° from vertical and/or to pitch up or down at an angle in excess of 45° from horizontal while executing a turn in excess of 60°.

(13) With the exception of DOD-sanctioned teams, intentional cutaway performances will not be initiated below 3,000 feet AGL. Intentional cutaway performances will not be initiated from any altitude by anyone if wind conditions would cause the cutaway equipment to drift into the spectator area.

(14) The team leader or jumpmaster is responsible for inspecting all parachutists' equipment and clothing, to include additional paraphernalia such as ropes, flags, and/or smoke/pyrotechnic devices for proper configuration and security prior to boarding the jump aircraft, and again just prior to exiting the jump aircraft.

(15) All jumpers using additional paraphernalia such as ropes, flags, and/or smoke/pyrotechnic devices shall have at least one jump utilizing an identical device(s) prior to accomplishing the demonstration.

(16) The holder of the Certificate of Waiver or Authorization shall brief the PIC of the jump aircraft and the jumpers on the terms of this Certificate of Waiver or Authorization.

(17) *[Insert name of responsible person]* shall notify the *[insert name]* FAA Flight Service Station of the date, time, place, areas, altitudes, nature of the activity, and duration of the operation and request that a NOTAM be issued. Such notice shall be accomplished by providing the controlling FSS with a copy of the Certificate of Waiver or Authorization in accordance with § 105.23.

(18) The flight crew of the jump aircraft shall coordinate the operation with, and monitor, *[insert name of ATC facility]* on *[insert frequency]* or as assigned by ATC, throughout the demonstration.

(19) The flight crew shall notify *[insert name of ATC facility]* (or as assigned by ATC) 10 and 5 minutes prior to the jumpers exiting the aircraft, when all jumpers are away, and when the last jumper is on the ground.

(20) The jump aircraft shall be equipped with a functioning 4096 Code Transponder with Mode "C" and shall use the transponder on the appropriate code (or as assigned by ATC) throughout the demonstration.

(21) The PIC of a civil jump aircraft is responsible for complying with all operational requirements of part 91 to include, but not limited to, operational limitations for flight with the door(s) open or removed and all gross weight and center of gravity limitations. The removal or installation of equipment in a civil aircraft or the increase in passenger loads, other than already approved for that aircraft, requires FAA approval such as TCDS, supplemental TCDS, or FAA field approval.

(22) Aircraft on the ground shall not operate engines, propellers, and rotors closer than 1,000 feet to touchdown area when jumpers are airborne.

(23) Tactical airborne demonstrations must be conducted on or beyond the Category II show line.

(24) In the event that a performance involves aircraft operating in the vicinity of parachutists, whether in free-fall or under deployed canopies, all pilots and the jumpermaster or team leader of the parachutists involved shall be present at the airshow briefing. *[insert name]* shall insure that each participant understands the details of the performance, which shall include, at the minimum, the following information:

- (a) The number of parachutists performing.
- (b) The types of and/or colors of parachutes.
- (c) The exit altitude and deployment altitude.
- (d) The planned flight path prior to exit, as well as, the descent area of the jump aircraft.
- (e) The number, type and color of the aircraft involved.

(f) Procedures to be used in the event of an unexpected occurrence.

I. Examples of Balloon Event Special Provisions.

As appropriate, include the applicable special provisions with the special provisions in paragraph 15D of this section for events that include balloon events.

(1) Section 91.119(b) and (c) are waived to the extent necessary to allow participating balloons to compete in *[insert the name of the balloon event here]* under the terms and conditions set forth in the FAA approved procedures section of the Organized Manned Balloon Competition Manual.

(2) The Organized Manned Balloon Competition Manual is incorporated into this Certificate of Waiver or Authorization and becomes a special provision thereof. Any action contrary to the terms, controls, procedures, and conditions pertaining to safety set forth in the FAA approved procedures is grounds for cancellation of this waiver.

(3) *[Insert name of responsible person]* shall ensure that each participating event crewmember has read and understands the FAA approved procedures section of the *[insert name of balloon manual]* and the special provisions of this waiver.

J. Examples of Air Race Special Provisions. As appropriate, include the applicable special provisions in addition to the special provisions in paragraph 15D of this section for events that include air races.

(1) The race course is depicted and described on attachment #*[insert number]* of this Certificate of Waiver or Authorization.

(2) Racing flight operations are not authorized when the reported (or observed) flight visibility is less than 3 statute miles. *[This value should be adjusted upward for racing speeds above 300 knots.]*

(3) In the event of an accident considered to be the result of a course deficiency or racing procedures, flight operations will be canceled until the deficiency has been corrected by the person designated responsible for the overall safety of the event, and the correction accepted by the IIC.

(4) All flights conducted less than *[insert number]* feet AGL shall be conducted *[insert number]* feet from the show line located on the *[insert direction]* edge of runway #*[insert runway number]* and within *[insert number]* feet horizontally of the depicted course.

(5) The pilot of any race aircraft operating outside the course, as described in provision #*[insert number]* above, shall be immediately disqualified by the certificate holder and directed to vacate the race course.

(6) Maneuvers such as steep turns in air racing are not considered aerobatic flight.

(7) A control point shall be established where the certificate holder or representative shall direct the demonstration. This person shall be continuously available to the FAA and is the person designated as responsible for the overall safety of the event.

(8) Racing flight operations may be no closer than 500 feet horizontally from the primary spectator areas for all aircraft.

(9) A crowd line consisting of a physical barrier and/or adequate policing shall be provided to confine the spectators to designated areas. The spectator areas shall have well defined lateral boundaries.

(10) The demonstration shall be halted for any reason that is in the interest of safety. It shall also be halted when unauthorized aircraft enter the airshow operations area, and/or when unauthorized persons or vehicles enter the area underlying the racing flight operations area. Only the minimum number of authorized persons necessary to support operations will be authorized in the operating areas. The holder of the Certificate of Waiver or Authorization assumes responsibility for persons who enter the operations area.

(11) The following facilities shall be provided and readily available at the demonstration site. *[List the emergency and medical equipment or personnel that the sponsor and the IIC have agreed are needed, and include an emergency plan.]*

(12) To alert nonparticipating aircraft, a closed field signal in the form of a large "X," which is colored aviation yellow and readily visible from 3,000 feet above the surface, must be displayed on a prominent part of the airport when the racing flight operations are in progress. *[This closed field signal is necessary at most uncontrolled airports and airports which have only a non-Federal control tower, but is usually not required at airports which have a Federal control tower.]*

(13) *[Insert name of responsible person]* shall ensure that roads and buildings under the specified racing flight operations area are devoid of vehicular and pedestrian traffic and/or persons.

K. Examples of Ground-Based Pyrotechnics Special Provisions. As appropriate, in addition to the applicable special provisions in paragraph 15D of this section, include the following special provisions/restrictions for events that will use ground-based pyrotechnics, if the ground-based pyrotechnics will be installed and/or detonated anywhere on the airport surface.

(1) Ground-based pyrotechnics shall not be placed on and/or detonated in any safety area(s) defined by 14 CFR part 139, § 139.309, and described in the airport certification manual if any certificated air carrier or commercial operator will be conducting revenue operations on the adjacent airport movement area(s) during the time period beginning when ground-based pyrotechnics are installed and ending when the ground-based pyrotechnics have been expended and/or safely removed and secured.

(2) For all other public use airports, ground-based pyrotechnics shall not be placed on and/or detonated in any safety area(s) as defined in AC 150/5300-13, Airport Design, Tables 3-1, 3-2, or 3-3, as appropriate, if any nonparticipating aircraft will be operating on the adjacent airport movement area(s) during the time period beginning when ground-based pyrotechnics are installed and ending when the ground-based pyrotechnics have been expended and/or safely removed and secured.

(3) If nonparticipating aircraft operations will be restricted to provide adequate separation from ground-based pyrotechnics to assure the safety of the aircraft relative to the use of ground-based pyrotechnics, the restricted movement plan must be approved by the airport manager and/or other appropriate official(s).

(4) The placement and planned use of ground-based pyrotechnics must be thoroughly reviewed in the event participants' briefing as required by special provision [enter number].

(5) The placement and planned use of ground-based pyrotechnics must be approved by the airport manager and/or other appropriate official(s).

NOTE: Consult with airport manager on location of airport safety areas.

L. Examples of Agricultural Aircraft Demonstration Special Provisions. As appropriate, in addition to the applicable special provisions in paragraph 15D, include the following special provisions/restrictions for events that will use agricultural aircraft demonstrations.

(1) No pilot shall perform any agricultural aircraft demonstration unless they comply with the provisions of 14 CFR § 137.53(a) and (b).

(2) The aircraft must meet the provisions of § 137.53(c).

(3) All pull-up and turn-around maneuvers shall be initiated in a direction other than toward the primary spectator area.

(4) Only water will be dispensed. The demonstration shall be conducted on or beyond the Category III showline and in a manner as to prevent the dispensed water from drifting into the primary spectator area.

(5) Aircraft and equipment used for the agricultural aircraft demonstration shall be thoroughly cleansed prior to the flight demonstration and/or public static display so as to be free of any poisons or other chemicals.

(6) Aircraft used for conducting agricultural aircraft demonstrations shall not conduct maneuvers that exceed 90 degrees of pitch or bank, or as limited by the appropriate aircraft flight manual.

[PAGES 49-35 THRU 49-44 RESERVED]

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites. This task requires knowledge of regulatory requirements in part 91 and FAA policies and qualification as an ASI (operations).

(1) The inspector assigned this task is also responsible for the surveillance of the aviation event. (See volume 2, chapter 50.)

(2) The inspector assigned this task and the subsequent surveillance MUST have completed on-the-job training (OJT) and participated in the issuance of a certificate of waiver and the surveillance of three aviation events with an inspector qualified in this task.

(3) For aviation events where a military jet aerobatic demonstration team performs, the inspector must have satisfactorily completed OJT training (including participation in the feasibility study, the preseason evaluation meeting, waiver preparation, and airshow surveillance) at an event that includes a military jet aerobatic team.

B. Coordination. This task requires prior coordination with the appropriate air traffic facility and the airworthiness unit.

2. REFERENCES, FORMS, AND JOB AIDS.

A. References.

- 14 CFR parts 1, 61, 91, 103, 105, 133, and 139.
- AC 91-45, Waivers: Aviation Events
- AC 103-7, The Ultralight Vehicle
- AC 105-2, Sport Parachute Jumping

B. Forms.

- FAA Form 7711-1, Certificate of Waiver or Authorization (figure 49-25)
- FAA Form 7711-2, Certificate of Waiver or Authorization Application (figure 49-3)
- FAA Form 8000-36, Program Tracking and Reporting Subsystem Data Sheet
- FAA Form 8710-7, Statement of Acrobatic Competency (figure 49-4)
- DD Form 2535, Request for Military Aerial Support (figure 49-13)
- Transport Canada Aviation (TCA) Form 26-0307, Statement of Acrobatic Competency

C. Job Aids.

- Sample letters and figures

3. GENERAL PROCEDURES.

A. Determine if a Waiver or Authorization is Required. If the event cannot take place in compliance with the regulations, a waiver is required.

(1) If a waiver or authorization is not required, no further action is required with this task. However, DD Form 2535, section V, should be completed and signed if requested by an event sponsor. These forms are required for vehicle and static displays as well as for military flight demonstrations.

(2) If a waiver or authorization is required, brief the applicant on preparing FAA Form 7711-2.

B. PTRS.

- Open PTRS File.

C. Brief Applicant.

(1) Advise applicant on the procedures to prepare FAA Form 7711-2.

(2) Advise the applicant on the procedures to obtain AC 91-45, AC 103-7 (if applicable), and AC 105-2.

(3) Provide applicant with FAA Form 7711-2 (figure 49-3).

4. ADDITIONAL PROCEDURES FOR MILITARY APPLICANTS. In addition to the procedures in section 2, paragraph 3 above and paragraph 5 following, conduct the following procedures for military applicants.

A. Determine if a Feasibility Study is Required. A feasibility study by the FAA is required only when a DOD aerial demonstration team (Thunderbirds or Blue Angels) is participating in an event that requires a Certificate of Waiver or Authorization.

B. Conduct Feasibility Study.

(1) Determine if an on-site inspection is required. An on-site inspection is required when:

- (a) the inspector is not familiar with the area of the scheduled event;
- (b) there has not been a show there before; and/or

(c) there may be new construction or other unique environmental changes near the site.

(2) If an on-site inspection is required, conduct the inspection with the show sponsor.

(3) The inspector shall determine:

(a) if the operating area is large enough to contain the aerobatic maneuvers;

(b) whether proposed egress and ingress routes adversely impact safety; and

(c) whether a waiver of § 91.119(b) and (c) is necessary.

C. Complete Applicable Section of DD Form 2535, Request for Military Aerial Support. Fill in the appropriate FAA blocks on the form, with special emphasis on Block 17 (figure 49-13), and sign the form. Retain a copy of DD Form 2535 for the office file. Return the original to the show sponsor.

D. Preseason Evaluation Meeting. Attend the preseason evaluation meeting for those events at which the U.S. Air Force Thunderbirds or the U.S. Navy Blue Angels participate. At this meeting the inspector should discuss the following:

(1) proposed special provisions of the Certificate of Waiver or Authorization;

(2) safety concerns unique to the site;

(3) past events, if appropriate;

(4) whether a waiver to § 91.119(b) or (c) is necessary; and

(5) proposed egress and ingress routes that will require FAA approval.

5. GENERAL PROCEDURES CONTINUED.

A. Evaluate FAA Form 7711-2. Using the information provided by the applicant and the background in section 1, review FAA Form 7711-2 for all pertinent information and supporting documents for the proposed aviation event. Accept strikeovers that are minor in nature and initialed by the applicant. Items 9 through 14 apply to airshow and air race waiver requests only.

(1) *Items 1 and 2, Name of Organization/Name of Responsible Person.* Ensure that the applicant has indicated the name of the organization or the individual applying and the name of a person responsible.

(2) *Item 3, Permanent Mailing Address.* Ensure that the applicant indicates the permanent mailing address of the organization or the individual named in Item 1.

(3) *Item 4, Section and Number to be Waived.* Ensure that the applicant has listed all sections of the regulations to be waived.

(4) *Item 5, Description of Proposed Operation.* Determine if the applicant has correctly indicated the type of aviation event.

(5) *Item 6, Area of Operation.* Ensure that the applicant has listed the specific locations and altitudes of the aerial demonstrations.

(6) *Item 7, Beginning Date and Hour and Ending Date and Hour.* Check for a beginning date and time, and an ending date and time for the aviation event.

(7) *Item 8, Aircraft and Pilots.* Check for aircraft make and model, pilot names, certificate numbers and ratings, and full home addresses. Ensure that parachutist names, license class, and addresses are included. Item 8 may be accepted with a statement, "A list containing aircraft and pilot information (and/or parachutist information) will be furnished on [applicant enters a specific date and time]".

(8) *Items 9 and 10, Sponsorship.* Ensure that the applicant has indicated the sponsor (organization or individual) of the aviation event and the sponsor's address.

(9) *Item 11, Policing.* Ensure that the applicant has described provisions for policing the event.

(10) *Item 12, Emergency Facilities.* Ensure that the applicant marked all items that will be available at the time and place of the event.

(11) *Item 13, Air Traffic Control.* Ensure that the applicant has described the method of controlling air traffic, including the arrival and departure of aircraft, and has coordinated with the appropriate FAA ATC.

(12) *Item 14, Schedule of Events.* Ensure that the applicant has listed all events and dates and times.

(13) *Item 15, Certification.* Ensure that the applicant has signed and dated the application.

B. Application Incomplete or Inaccurate. If the application is incomplete or inaccurate, complete the FAA Action block on FAA Form 7711-2 by marking "Disapproved." Write the reason for disapproval in the Remarks section. Return the application to the applicant.

C. Application Complete. If all pertinent information and supporting documents have been submitted with the application and the application is complete and correct, evaluate the proposed operation.

D. Evaluate Proposed Operation. Use the application information and the items listed below to determine if the proposed operation can be accomplished without an adverse effect on safety:

(1) Review, if applicable, previous certificates of waiver or authorization issued for aviation events at the same location.

(2) Coordinate the use of controlled airspace with the appropriate air traffic facility as soon as possible. Include any limitations or special conditions considered necessary by the Air Traffic Service as part of the Certificate of Waiver or Authorization.

(3) Using the list of participating aircraft, verify that the required documents have been completed by the airworthiness unit.

(4) Using the list of participating aircraft and table 1 in section 1, determine the required showline distance.

(5) Accompanied by the applicant, conduct an on-site visit to sites used for the first time and to sites unfamiliar to the inspector.

(a) Clarify or confirm information submitted with the application.

(b) Verify the distances and the location of the showline.

(6) Encourage the sponsor to include the following cautionary statement in the NOTAM issued for the airshow, advising of the congestion around the airshow site and the absolute necessity of compliance with the regulations at all times, including when cleared for a low approach/flyby.

All arriving and departing aircraft are cautioned that the airspace in and around _____ airport will be very congested before and after the airshow scheduled for _____, between the hours of _____ and _____. In addition, aircraft that request a low approach upon arrival or departure are reminded that any low approach must be conducted within the regulations concerning speed, altitude, aerobatic maneuvers, and any other regulatory requirements. Low approaches/flybys will be granted only as the air traffic situation permits.

E. Waiver of § 91.119. Determine if a waiver of § 91.119 is appropriate.

(1) Waive § 91.119(b) and (c) only if the pilot will still be in compliance with § 91.119(a).

(2) Waive § 91.119(b) and (c) only for nonaerobatic flight, while temporarily exiting or returning to the operating area. The standards aerobatic maneuvers area for U.S. military jet demonstration teams is 1 statute mile either side of show center.

(3) Waive § 91.119(c) only if unoccupied structures are involved, or to allow participating personnel, vehicles, or vessels to be positioned closer than 500 feet from the performing aircraft (see paragraph 5E(5) below).

(4) Waive § 91.119(b) and (c) for flight over structures, roads, vehicles, or vessels under the following conditions for the U.S. Air Force Thunderbirds, U.S. Navy Blue Angels, and Canadian Defense Forces Snowbirds:

(a) when the showline is generally aligned with a runway at an active airport;

(b) when ingress and egress transition of the operating area coincides with established approach or departure paths used for the designated runway;

(c) when aerobatic flight will not be conducted over any nonparticipating persons; or

(d) when nonaerobatic flight over nonparticipating persons is not closer than 200 feet during ingress and egress and within 3 nm of show center on an FAA approved ingress/egress route.

(5) Consult with the regional airshow coordinator as necessary.

F. Review the Organized Manned Free Balloon Competition Manual.

(1) If applicable, determine if the balloon manual clearly delineates the operations to be conducted by, or under the control of, the applicant.

(2) Ensure that, as a minimum, the manual addresses the items listed in section 1, paragraph 8E. If the manual cannot be approved, disapprove the application for a balloon event.

G. Accept the Organized Manned Free Balloon Competition Manual.

(1) Stamp each page with the word "ACCEPTED."

(2) Sign and date each page.

H. Review Race Course Design. If applicable, ensure that the applicant's diagrams are of sufficient detail and include the mathematical formula determinations specified in section 1, paragraph 7.

(1) If the race course design cannot be accepted, disapprove the application.

(2) If the design can be accepted, include the accepted race course design in its entirety as a part of the Certificate of Waiver or Authorization as a special provision.

I. Waiver Disapproval. If the entire operation cannot be approved, complete the FAA Action block on FAA Form 7711-2 and state the reasons for disapproval in the Remarks section of the form. Return the application form to the applicant.

J. Waiver Approval. If the entire operation can be approved, complete the FAA Action block on FAA Form 7711-2 and develop the special provisions.

K. Develop Special Provisions. Develop the list of special provisions appropriate to the aviation event using the information submitted with the application and the suggested special provisions in section 1, paragraph 15D.

L. Issue Certificate of Waiver or Authorization.

(1) Complete FAA Form 7711-1, (figure 49-25) as follows:

(a) In the Title block, use “X”s to mark out the inappropriate word.

(b) Enter the waiver holder's and responsible person's names and addresses as they appear in Items 1 and 2 on the application. (Refer to section 1, paragraph 14A.)

(c) Include a brief summary of the aviation event in the Operations Authorized block. For aviation events involving aerobatic flight, clearly define the dimensions of the affected airspace. In the case of parachute demonstration jumps, use the following statement, “Parachute demonstrations are authorized in accordance with § 105.15.”

(d) Except for parachute demonstrations, include in the List of Waived Regulations and Title block each specific regulation waived by the FAA. Ensure that the listed regulations correspond to those on FAA Form 7711-2 and conform to § 91.905. When many regulations are involved, list the specific rules on a separate sheet of paper and attach it to the certificate. Use the following statement, “A list of waived regulations is attached.”

(e) Place the total number of special provisions in the appropriate spaces in the Special Provisions block.

i. Type and sequentially number the special provisions on the reverse side of FAA Form 7711-1 or on separate pages.

ii. Use only the special provisions which apply to the operations in the waiver or authorization application.

iii. Group the provisions by type of event, such as airshow provisions or parachute demonstration jump provisions.

(f) Attach any additional pages to the Certificate of Waiver or Authorization.

(g) When an aviation event is scheduled for more than 1 day, use a separate sheet to list the dates and times the certificate is in effect. Use the following statement “See attached page [insert appropriate page number] for dates and times.”

(h) Have the appropriate FSDO manager sign FAA Form 7711-1.

(2) Attach to FAA Form 7711-1 a copy of FAA Form 7711-2 and its supporting documents.

(3) Distribute FAA Forms 7711-1 and 7711-2 as follows:

(a) place a copy of both forms in the FSDO file;

(b) send a copy of FAA Form 7711-1 to all affected air traffic facilities; and

(c) return the original of both forms to the applicant.

M. PTRS. Make the appropriate PTRS entry.

6. TASK OUTCOMES. Completion of this task results in one of the following.

A. Issuance of a certificate of waiver.

B. Issuance of a certificate of authorization.

C. Denial of an Application for a Certificate of Waiver or Authorization.

7. FUTURE ACTIVITIES.

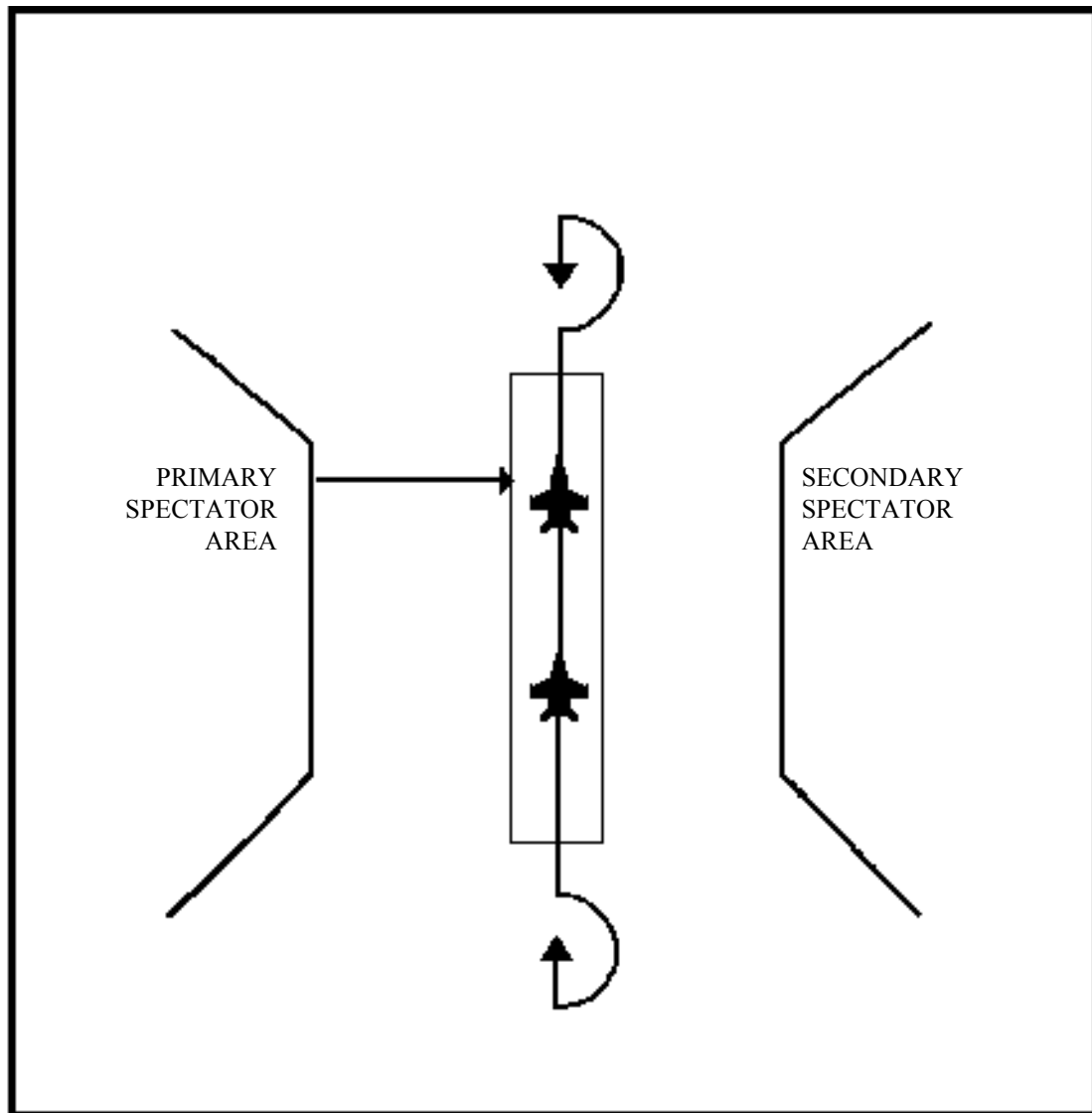
A. Surveillance of an aviation event.

B. Possible cancellation of the waiver or authorization as a result of noncompliance with its provisions.

C. Consideration of a future application for waiver or authorization from the same or other applicants.

[PAGES 49-49 THRU 49-54 RESERVED]

FIGURE 49-1
SHOWLINE USING A RUNWAY AS THE CENTERLINE



**FIGURE 49-2
EGRESS AND INGRESS**

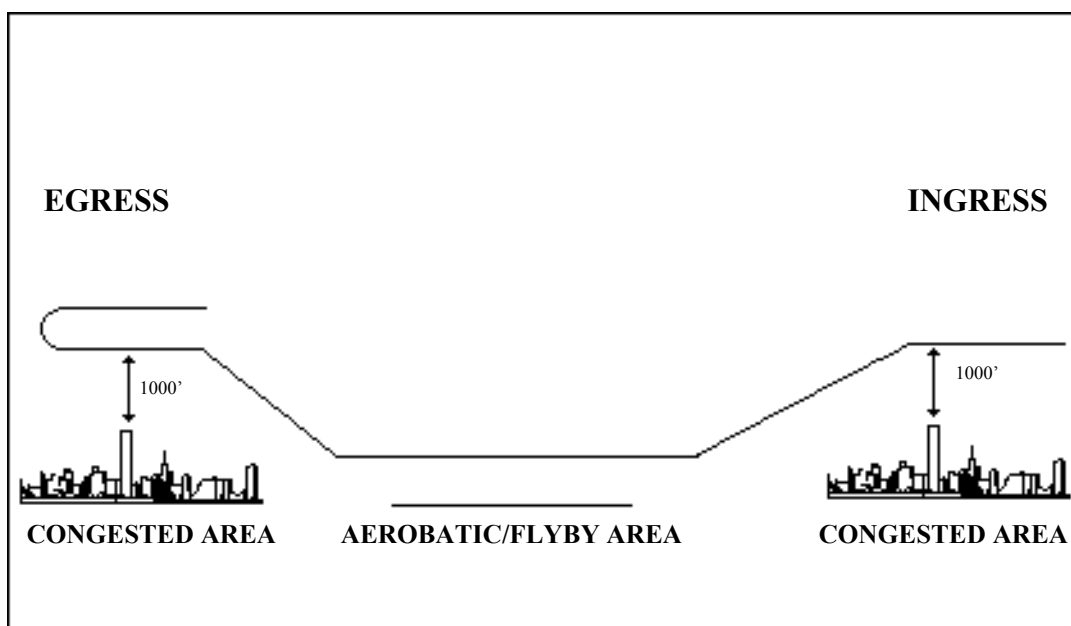


FIGURE 49-3
FAA FORM 7711-2, CERTIFICATE OF WAIVER OR AUTHORIZATION APPLICATION

No certificate may be issued unless a completed application form has been received (14 C.F.R. §1.101 and 105).

US Department of Transportation Federal Aviation Administration		Form Approved: O.M.B. No. 2120-0027 APPLICANTS - DO NOT USE THESE SPACES	
APPLICATION FOR CERTIFICATE OF WAIVER OR AUTHORIZATION		Region GREAT LAKES	Date MARCH 13, 1996
Action <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved - Explain under "Remarks"		Signature of authorized FAA representative James E. Hightower	
INSTRUCTIONS			
<p>Submit this application in triplicate (3) to any FAA Flight Standards district office.</p> <p>Applicants requesting a Certificate of Waiver or Authorization for an aviation event must complete all the applicable items on this form and attach a properly marked 7.5 series Topographic Quadrangle Map(s), published by the U.S. Geological Survey (scale 1:24,000), of the proposed operating area. The map(s) must include scale depictions of the flightlines, showlines, race courses, and the location of the air event control point, Police dispatch, ambulance, and fire fighting equipment. The applicant may also wish to submit photographs and scale diagrams as supplemental material to assist in the FAA's evaluation of a particular site. Application for a Certificate of Waiver or Authorization must be submitted 45 days prior to the requested date of the event.</p> <p>Applicants requesting a Certificate of Waiver or Authorization for activities other than an aviation event will complete items 1 through 8 only and the certification, item 15, on the reverse.</p>			
1. Name of organization HIGH ON KALAMAZOO, INC.		2. Name of responsible person JOHN M. ELLIS	
3. Permanent mailing address 5605 PORTAGE ROAD	House number and street or route number KALAMAZOO	City MI 49002	State and ZIP code Telephone No.
4. FAR section and number to be waived 91.117 (a & b), 91.303 (c, d & e), 91.119 (b & c), 91.127, 91.129, 105.15			
5. Detailed description of proposed operation (Attach supplement if needed)			
6. Area of operation (Location, altitudes, etc.) KALAMAZOO COUNTY AIRPORT 10,000' AND BELOW, RADIUS OF TEN (10) NAUTICAL MILES.			
7a. Beginning (Date and hour) APPLICANT MAY USE ATTACHMENT		b. Ending (Date and hour) APPLICANT MAY USE ATTACHMENT	
8. Aircraft make and model (a)	Pilot's Name (b)	Certificate number and rating (c)	Home address (Street, City, State) (d)
APPLICANT MAY USE ATTACHMENT			

FAA Form 7711-2 (6-88) Supersedes Previous Edition

FIGURE 49-3
FAA FORM 7711-2, CERTIFICATE OF WAIVER OR AUTHORIZATION
APPLICATION - Continued

ITEMS 9 THROUGH 14 TO BE FILLED OUT FOR AIR SHOW/AIR RACE WAIVER REQUESTS ONLY.				
9. The air event will be sponsored by:				
HIGH ON KALAMAZOO, INC.				
10. Permanent mailing address	House number and street or route number	City	State and ZIP code	Telephone No.
	5605 PORTAGE ROAD	KALAMAZOO	MI 49002	(616) 343-2548
11. Policing (Describe provisions to be made for policing the event.)				
APPLICANT MAY USE ATTACHMENT				
12. Emergency facilities (Mark all that will be available at time and place of air event.)				
<input checked="" type="checkbox"/> Physician <input checked="" type="checkbox"/> Fire truck <input checked="" type="checkbox"/> Other - Specify <u>EMS HELICOPTER</u> <input checked="" type="checkbox"/> Ambulance <input checked="" type="checkbox"/> Crash wagon				
13. Air Traffic control (Describe method of controlling traffic, including provision for arrival and departure of scheduled aircraft.)				
APPLICANT MAY USE ATTACHMENT				
14. Schedule of Events (Include arrival and departure of scheduled aircraft and other periods the airport may be open.)				
Hour (a)	Date (b)	Event (c)		
APPLICANT MAY USE ATTACHMENT				
If sufficient space is not available, the entire schedule of events may be submitted on separate sheets, in the order and manner indicated above.				
Please Read > The undersigned applicant accepts full responsibility for the strict observance of the terms of the Certificate of Waiver or Authorization, and understands that the authorization contained in such certificate will be strictly limited to the above described operation.				
15. Certification - I CERTIFY that the foregoing statements are true.				
Date	Signature of Applicant			
02-12-96	John M. Ellis			
Remarks				

FAA Form 7711-2 (5-88) Supersedes Previous Edition

FIGURE 49-4
FAA FORM 8710-7, STATEMENT OF ACROBATIC COMPETENCY

FRONT

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION STATEMENT OF ACROBATIC COMPETENCY	
PILOT <div style="text-align: center;">J. J. JONES</div>	
TYPE CERTIFICATE/NUMBER <div style="text-align: center;">COMMERCIAL 1234567</div>	
ISSUANCE DATE <div style="text-align: center;">03-30-96</div>	EXPIRATION DATE <div style="text-align: center;">03-31-97</div>
GENERAL AVIATION OPERATIONS INSPECTOR (Signature) <div style="text-align: center;">  J. J. SMITH ANE-BED-FSDO </div>	

FAA Form 8710-7 (5-79)

BACK

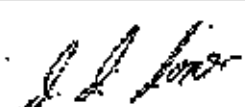
MANEUVER LIMITATIONS <div style="text-align: center;">NONE</div>	
ALTITUDE LIMITATIONS <div style="text-align: center;">LEVEL II</div>	AUTHORIZED AIRCRAFT <div style="text-align: center;">PITTS SPECIAL</div>
I understand that this statement of competency does not authorize deviation from FAR 91 except as defined by waiver thereto, or to the terms of Special Provisions contained in any waiver to FAR 91.	
PILOT (Signature) <div style="text-align: center;">  </div>	

FIGURE 49-5
TYPICAL AIR RACE SITE

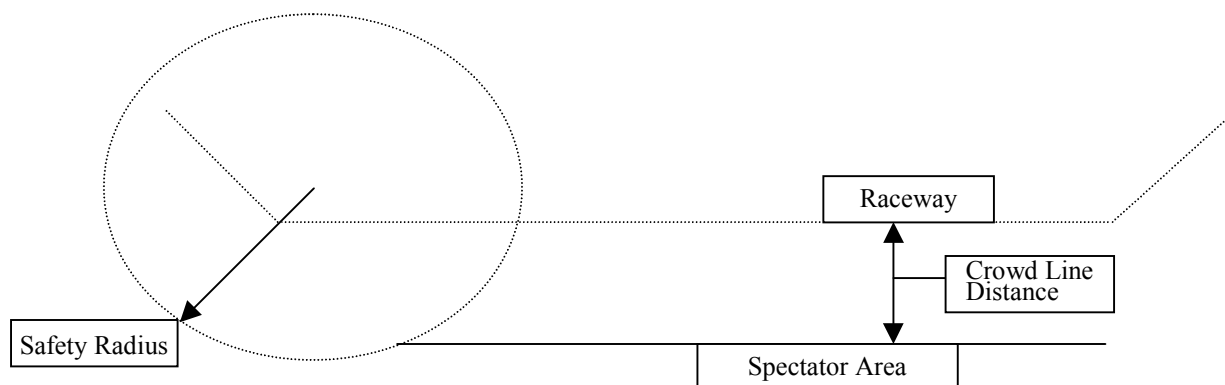
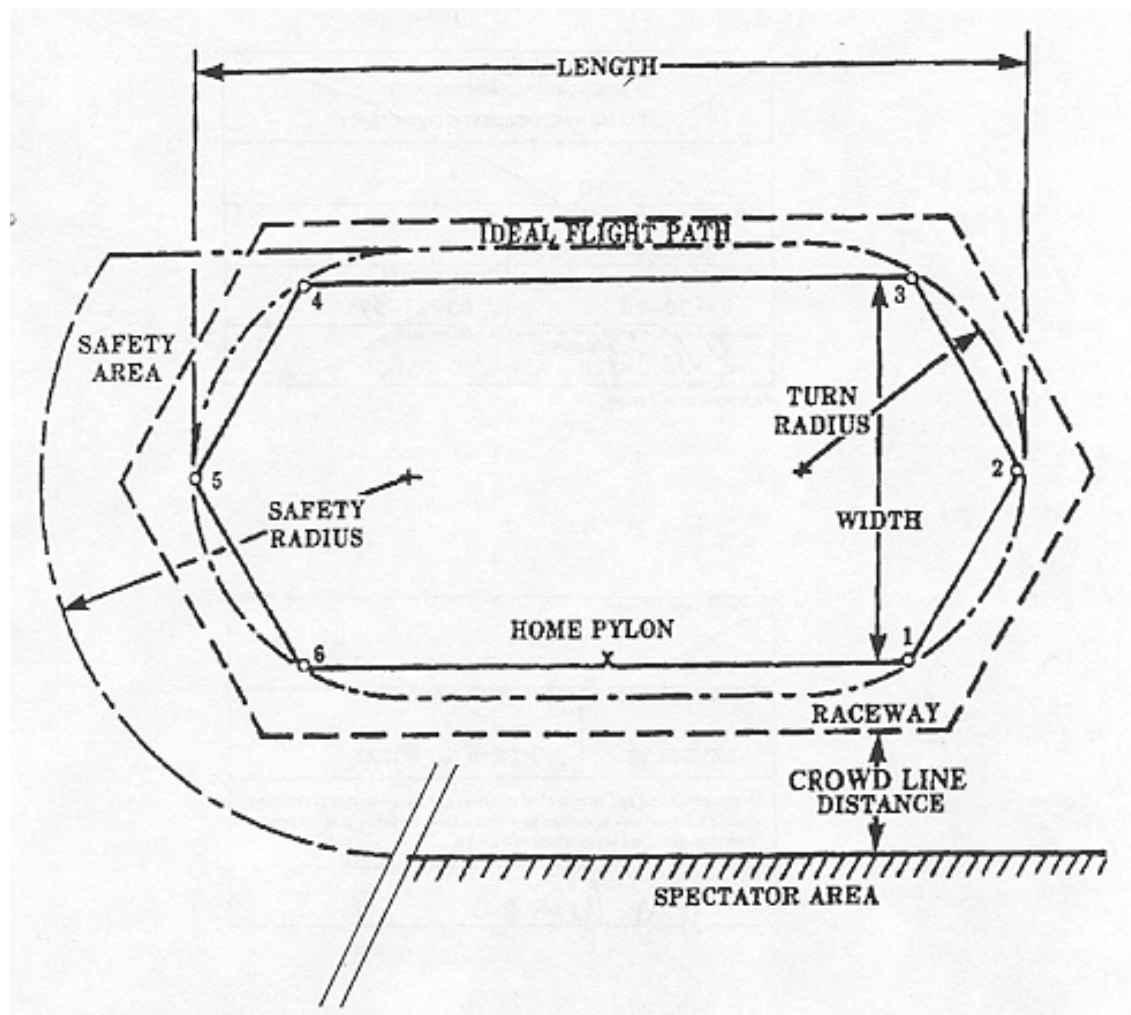
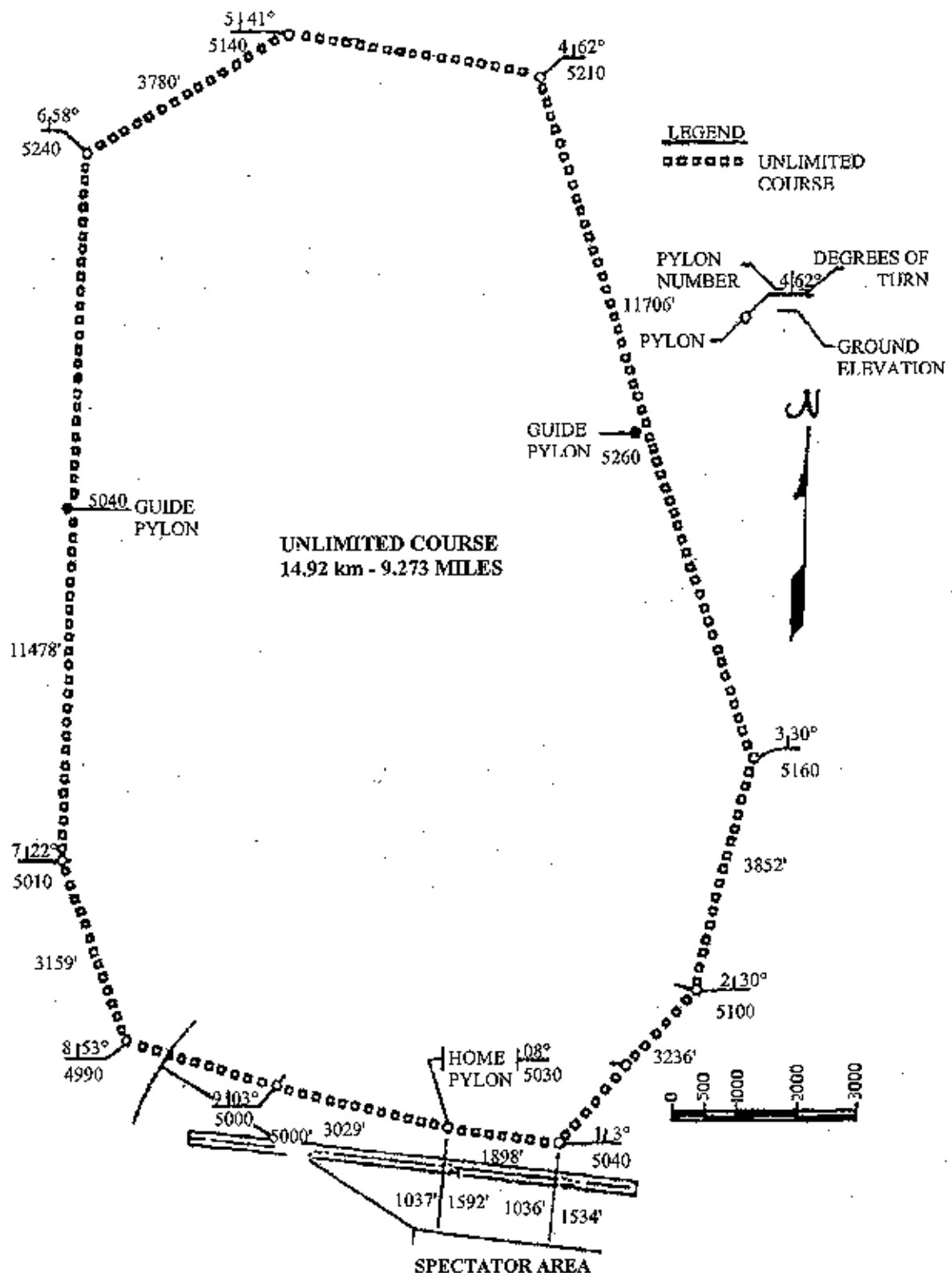


FIGURE 49-6
TYPICAL UNLIMITED RACE COURSE SITE



3.0 MILE [5.0 KM] FORMULA ONE AIR RACE COURSE
(Suitable for International Formula One, Sport Biplane and Formula V)



**FIGURE 49-8
PYLON RACING (RACE COURSE DESIGN PARAMETERS)**

	Formula Vee	Sport Biplane	At-6/SNJ	Int'l Formula 1	T-28	Sport Class	Unlimited
Max Speed (statute mph/knots)*	160.0/ 139.0	210.0/ 182.5	225.0/ 195.5	250.0/ 217.2	300.0/ 260.7	400.0 347.6	450.0/ 391.0
Max Speed (ft/sec) (V)	234.7	308.0	330.0	366.7	440.0	587.0	660.0
Min Turning Radius (R) for 3.5 g turn (ft)	509.9	878.4	1008.3	1244.8	1792.6	3241.5	4033.3
Scatter Distance (S) (ft)	---	---	1300.4	---	1733.8	2289.3	2600.8
250' altitude							
150' altitude	716.3	940.1	---	1119.2	---	---	---
Scatter Radius (ft) (Sr) for minimum turn radius	879.2	1286.6	1645.5	1674.0	2493.9	3968.4	4799.1
Safety Radius (ft) (Sfr) for minimum turn radius	1063.9	1490.7	1964.1	1888.5	2844.6	4319.8	5182.0
Crowd-to-Showline Distance (ft)	500.0	500.0	500.0	500.0	500.0	500.0	500.0

* Actual maximum speed may vary depending on conditions and race site.

**FIGURE 49-9
TYPICAL HOT AIR BALLOON**

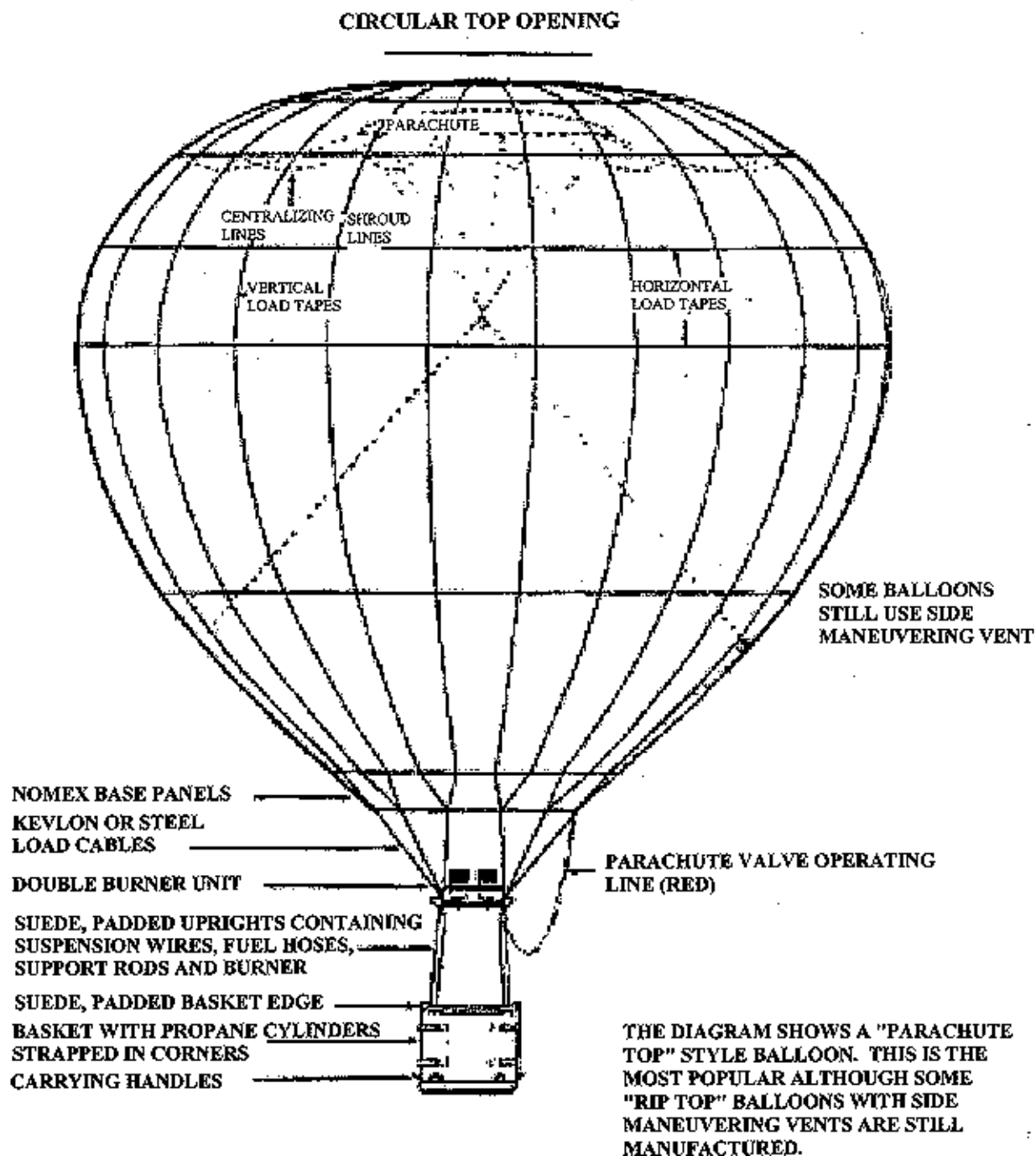


FIGURE 49-10
BALLOON TERMINOLOGY

BLAST VALVE	A high pressure fuel valve either full on or full off.
BULK TANK	Used for fuel storage and transfer to supply tanks.
DEFLATION PORT	Refers to the rip panel or envelope section removed for envelope deflation.
DROP LINE	A handling line carried in the basket to allow assistance by the ground crew when required.
ENVELOPE	The nylon material that encloses the lifting source.
EQUILIBRIUM	That point when lift equals weight and the balloon is neither climbing nor descending.
FALSE LIFT	Refers to the venturi effect of the wind that causes the balloon to lift before true equilibrium is reached.
FUEL	Generally propane.
GORE	Series of panels running from apex to mouth.
LOAD TAPES	Vertical or horizontal stress bearing nylon webbing.
MANEUVERING VENT	The envelope section that can be opened and closed to control the ascent or descent.
MOORED	Refers to a balloon secured by more than three lines.
PANEL	A fabric section sewn as part of a gore.
PARACHUTE TOP	A combination deflation port and maneuvering vent that is self-sealing when opened in flight.
SKIN TEMPERATURE	The temperature of the fabric envelope.
STEP CLIMB	A series of climbs and level-offs in ascent or descent.
TETHERED	Refers to a balloon secured by three lines or less.

FIGURE 49-11
SAMPLE LIST OF WAIVED REGULATIONS FOR BALLOON OPERATIONS
BY SECTION AND TITLE

Section 91.119(b), Minimum Safe Altitude

Section 91.119(b) is waived to allow balloon flight over any congested area of a city, town, or settlement or over an open air assembly of persons at an altitude of 500 feet above the highest obstacle, and within a horizontal radius of 500 feet of the balloon within a _____ nautical mile radius.

Note: Launching a balloon during the balloon meet anywhere in, into, or over a congested area or an open air assembly of persons shall require the pilot to be in a continuous normal rate of climb until an altitude of 500 feet above the highest obstacle within a horizontal radius of 500 feet of the balloon is attained.

In addition, § 91.119(b) is also waived to allow flight over, but no closer than 75 feet to, persons in the designated spectator areas that are under the direct control of the certificate holder.

Note: The designated spectator area shall be a minimum of 200 feet in radius from the designated or declared goal or target.

Section 91.119(c), Minimum Safe Altitude

Section 91.119(c) is waived to allow flight over open water or sparsely populated areas no closer than 200 feet from any person, vessel, vehicle, or structure.

FIGURE 49-12
EXAMPLE OF A BALLOON COMPETITION MANUAL

BALLOON COMPETITION MANUAL

This manual has been prepared as part of the application for the issuance of a Certificate of Waiver with attachments and special provisions for a Manned Free Balloon Competition on *[insert date]*. *[insert event name]*
BALLOON RACE

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- I. Purpose
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FIGURE 49-12
EXAMPLE OF A BALLOON COMPETITION MANUAL - Continued

SECTION I.

PURPOSE:

This manual is submitted as a part of an application for a waiver of Title 14 of the Code of Federal Regulations (14 CFR) part 91, §§ 91.119(b) and 91.119(c), by the *[insert name of organization]* for the *[insert name of event]* Balloon Race. Specifically, the waiver will allow officially registered balloons to operate at an altitude of no less than *[insert number]* feet above the highest obstacle within *[insert number]* feet radius of the balloon enroute to the target within a *[insert number]* nautical mile (or other specified distance) radius of the designated launch field or goal. It will also allow for officially registered balloons to operate at *[insert number]* feet AGL over spectators and to set goals and/or targets at a minimum distance of *[insert number]* feet from physical barriers provided for spectator control.

No waiver is requested nor is a waiver required by 14 CFR for any mass ascensions or pilot choice launches.

SECTION II.

RESPONSIBILITIES AND PROCEDURES

a) DUTIES OF PERSONNEL

- 1) Event Director - *[insert name]*
- 2) Operations Director - *[insert name]*
- 3) FAA Liaison - *[insert name]*
- 4) Weather Officer - *[insert name]*
- 5) Safety Officer - *[insert name]*

b) REGISTRATION AND AIRWORTHINESS DETERMINATION

Balloons flown at the event must have current certificates of registration and airworthiness, or in place of the latter, an equivalent document from the Federal Aviation Administration. Chapter *[insert number]* of the competition rules cover procedures for balloons damaged or otherwise made unairworthy during the event. Throughout the event the Safety Officer or his designees; and appropriate FAA personnel will be consulted as necessary.

c) PILOT AND EVENT FLIGHT CREWMEMBERS

Each pilot must hold the appropriate pilot certificate (Private or Commercial) with Lighter-Than-Air Category and Free Balloon Class Rating. Each pilot must show evidence of current Flight Review (14 CFR part 61, § 61.56) and must also show evidence of currency per § 61.57. Minimum hours as PIC per the organizers specified time must also be shown.

Event flight crewmembers carried on board a balloon during the event must have been briefed by the pilot of the balloon and must attend the pilot briefing for that flight. Each event flight crewmember must sign the wavier form supplied by the pilot. Each event flight crewmember must attest that they have attended the applicable pilot briefing(s) and have read and understand the conditions of the waiver. Only *[insert number]* event flight crewmember(s) may be carried in each balloon during the flight.

FIGURE 49-12
EXAMPLE OF A BALLOON COMPETITION MANUAL - Continued

d) PILOT CREW BRIEFING PROCEDURES

All pilots are required to sign a statement indicating that they have read and understand the provisions of the waiver and the official *[insert title]* Competition Rules prior to any competitive flight.

Before each flight all pilots must attend the flight briefing. Chapter *[insert number]* of the competition rules provides details of all briefings.

e) LETTER OF AGREEMENT

Letter of agreement will be issued and signed as required for the specific type of event.

f) EVENT DOCUMENTATION

All relevant registration files, task data sheets, pilot registration information etc., will be maintained by the organizer at least *[insert number]* days after the event and will be made available to the FAA Monitor upon request. Competition maps and task sheets will be made available to the FAA Monitor at the time of the pilot briefing.

SECTION III.

GROUND OPERATIONS

a) CLEAR AREAS

Clear areas are established at each target site. These areas are kept clear of spectators and are usually fenced. *[Insert type of officials]* will police any area (such as the target area on the main launch field) to keep unauthorized persons out. In the Minimum Altitude Diagram, this is referred to as the "Target Area."

b) SPECTATOR AREAS

The primary competitive spectator area is located at the main launch site. Crowd control is initiated by physical barriers around the launch site and target areas controlled by *[insert type of officials]*. Official and balloon recovery vehicles are parked in restricted areas. Traffic is controlled by local police as required. Use of existing and temporary barriers secure spectators from the briefing area and headquarters and from potential low level flight areas surrounding goals/targets (see additional remarks under "ALTITUDES").

Competitive goals/targets set outside of the primary launch area in remote areas attract few, if any, spectators beyond those involved in race operations (officials and crews). Scoring/measuring officials control these areas as determined by conditions, and will isolate the area surrounding the goal/target from any unauthorized personnel.

c) CROWD CONTROL REQUIREMENTS

Crowd control will be provided by *[enter law enforcement agency name(s)]* agencies and officials of the balloon event under the direction of the Safety Officer.

d) LANDOWNER RELATIONS/NOTIFICATION

Positive landowner relations are vital to the continuance of sanctioned events. There is an ongoing effort by all involved persons to maintain good landowner relations for the event. Additionally, as per Rule *[enter number]* pilots must obtain permission for launch from private property; and per Rule *[enter number]* minimize disturbing landowners. Landowners may request that their property be indicated on the competition map as a Prohibited Zone (PZ) as per Rule *[enter number]*.

FIGURE 49-12
EXAMPLE OF A BALLOON COMPETITION MANUAL - Continued

SECTION IV.

FLIGHT OPERATIONS

a) AREA OF OPERATION

The operations will occur in a [insert number] mile radius of the launch field located at [insert name] Airport as indicated on the official competition map (to be provided as requested). Final landings may occur beyond these boundaries, but no pilot choice take-offs or mass ascensions will exceed these boundaries. Headquarters for the event operations will be located at the [insert name of location].

b) TYPES OF OPERATIONS

The event will consist of single and multiple tasks as called by the Director after consultation with other approved competition officials, as appropriate, considering the conditions at hand and forecast to develop during the anticipated flight times.

The tasks will include:

1) PILOT DECLARED GOAL

Each pilot will fly from a launch area and shall attempt to drop a marker close to a goal selected by him/her.

2) JUDGE DECLARED OR MULTIPLE JUDGE DECLARED GOAL

Each pilot will fly from a launch area and attempt to drop a marker close to a goal or goals.

3) HARE AND HOUND

A hare balloon will fly from the launch area and each pilot will attempt to fly near the final landing place of the hare and drop the marker.

4) FLY IN TASK

Pilots find their own launch areas and attempt to reach a set goal or target.

5) FLY ON TASK

A task where a pilot declares a goal, to which he flies after dropping his marker in another task.

6) GORDON BENNETT MEMORIAL

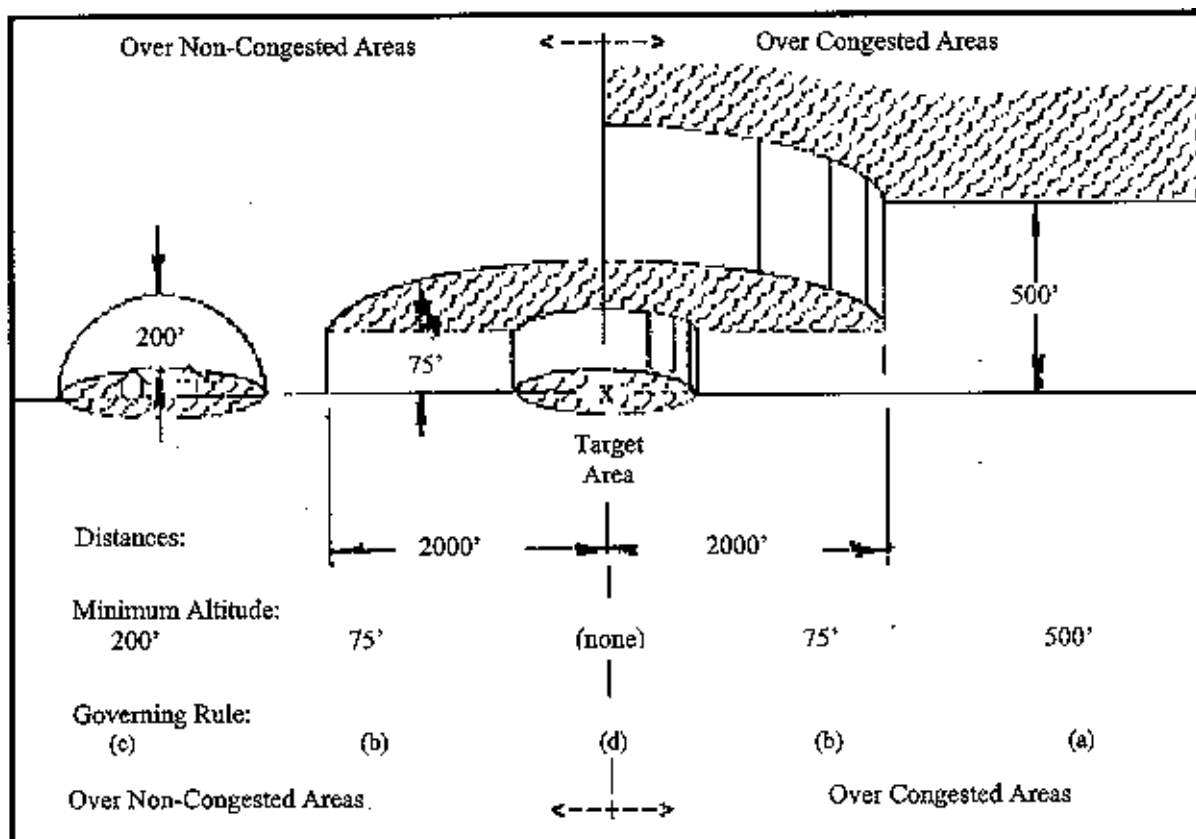
Pilots will attempt to drop their markers within a Scoring Area as close as possible to a target or other defined location(s).

7) MAX DISTANCE - MINIMUM DISTANCE

Pilots will attempt to drop their markers in the Scoring Area a maximum or minimum distance from the launch point as specified on the task sheet.

FIGURE 49-12
EXAMPLE OF A BALLOON COMPETITION MANUAL - Continued

c) MINIMUM ALTITUDE DIAGRAM



d) ALTITUDES

The waiver provides that registered balloons will be allowed to make approaches to targets and/or goals within the designated areas. Balloons making these approaches will be permitted to fly over the designated spectator areas at an altitude of not less than [insert number] feet AGL. The balloons must have attained a state of altitude equilibrium at this [insert number] feet minimum altitude and not be descending while passing over designated spectator areas. It is felt that this altitude is sufficient to allow for unusual circumstances with an adequate margin of safety for spectators.

In order to provide the highest possible level of safety for spectators, the scoring officials will cause scoring/measuring officials to be positioned among the spectators to allow crowds to be shifted as necessary and to provide warning regarding any markers that may be dropped in the spectator areas. Announcements over the public address systems will also advise the spectators of the possibilities of both low flying balloons over the area and of markers being dropped in this area.

e) WEATHER REQUIREMENTS

Flight operations will be conducted during the period from published Sunrise to Sunset, with the Visual Flight Rules (VFR) and weather conditions as specified in § 91.155. Maximum demonstrated surface winds must be [insert number] or less.

The decision for flight is the sole responsibility of the Pilot and the decision of whether to hold a task is the sole responsibility of the Director after consultation with appropriate safety officials.

FIGURE 49-12
EXAMPLE OF A BALLOON COMPETITION MANUAL - Continued

f) COMMUNICATIONS REQUIREMENTS

Primarily by required pilot briefing, however, supplementary information is also given on local radio stations and on the public address system. Most pilots carry either FM, CB or aircraft radios and some communication is possible by radio.

g) AIR TRAFFIC COORDINATION

A NOTAM will be requested from the [*insert name*] FSS advising air traffic of numerous balloons in the [*insert name*] area at varying altitudes from [*insert date*] through [*insert date*] during the three hours immediately after sunrise and three hours prior to sunset.

This Operations Manual includes the information and requirements contained in the following attachments.

ATTACHMENTS:

- Sectional of Area
- List of Pilot Entries
- Schedule of Events
- Statement of Responsibility
- Competition Rules

FIGURE 49-13 **REQUEST FOR MILITARY AERIAL SUPPORT**

REQUEST FOR MILITARY AERIAL SUPPORT ALL EVENT SPONSORS MUST READ THE INSTRUCTIONS ON PAGE 4 BEFORE COMPLETING THIS FORM.				REQUEST NUMBER Form Approved OMB No. 0704-0290 Expires Jun 30, 2003	
<small>The public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0290), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</small>					
PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS. RETURN COMPLETED FORM TO THE ADDRESS ON PAGE 4.					
ALL DATA WILL BE HANDLED ON A "FOR OFFICIAL USE ONLY" BASIS.					
SECTION I - ACTIVITY					
1. CATEGORY REQUESTED(X and complete as applicable)		(1) DATE OF EVENT (YYYYMMDD)	(2) TYPE AIRCRAFT REQUESTED ANY (X) SPECIFIC (Optional)		(3) MILITARY SERVICE REQUESTED ALL (X) SPECIFIC (Optional)
a. FLYOVER (See paragraph 4 of Instructions)					
b. STATIC DISPLAY (See paragraph 5 of Instructions)					
c. SINGLE AIRCRAFT DEMONSTRATION (See paragraph 7 of Instructions)					
d. OTHER AERIAL SUPPORT (i.e. Parachute Demo, SAR Demo)					
e. AERIAL DEMONSTRATION TEAM (X all requested. See Instructions.)		(a) PRIMARY DATE (YYYYMMDD)	(b) ALTERNATE DATE(S) (YYYYMMDD)		(c) I WILL CONSIDER ANY DATE DURING AIR SHOW SEASON (X one)
U.S. ARMY GOLDEN KNIGHTS					YES
U.S. NAVY BLUE ANGELS					
U.S. AIR FORCE THUNDERBIRDS					
OTHER (Specify)					NO
SECTION II - EVENT AND SITE INFORMATION					
2.a. EVENT TITLE					
b. SITE OF EVENT		c. SITE CITY, STATE AND ZIP CODE		d. SITE ELEVATION (Feet above sea level)	e. RUNWAY LENGTH X WIDTH
f. ARRESTING GEAR (X one) <input type="checkbox"/> YES <input type="checkbox"/> NO		g. TYPE OF SITE (i.e., airport, park, lake, etc.)			
3. EVENT SITE CERTIFICATION (To be completed by an agent exercising authority for site use) I certify that an agreement has been made with the sponsoring organization indicated in Section III to use the event site indicated in 2.b. above.					
a. NAME (Last, First, Middle Initial)		b. TITLE		c. TELEPHONE NO. (Include area code)	
d. SIGNATURE				e. DATE SIGNED (YYYYMMDD)	
4. INCLUSIVE DATES OF EVENT (YYYYMMDD)			5. IS THERE CIVILIAN AVIATION/AERIAL PARTICIPATION PLANNED FOR THE EVENT? (X one)		<input type="checkbox"/> YES <input type="checkbox"/> NO
6. ATTENDANCE			7. PLANNED MEDIA COVERAGE (X as applicable)		
a. PROJECTED	b. PRIOR EVENT		<input type="checkbox"/> TELEVISION <input type="checkbox"/> RADIO	<input type="checkbox"/> PRINT <input type="checkbox"/> NONE	
SECTION III - SPONSOR INFORMATION					
8. LOCAL SPONSORING ORGANIZATION					b. TYPE (X one)
a. NAME					<input type="checkbox"/> PROFIT <input type="checkbox"/> NONPROFIT
9. POINT OF CONTACT FOR AVIATION ACTIVITIES FOR THIS EVENT					
a. (X one) <input type="checkbox"/> MR. <input type="checkbox"/> MS. <input type="checkbox"/> OTHER		b. NAME (Last, First, Middle Initial)		c. RANK (If military)	
d. ADDRESS					
(1) NUMBER AND STREET/SUITE NUMBER			(2) CITY	(3) STATE	(4) ZIP CODE
e. TELEPHONE NO. (Include area code or DSN if military) (1) (2)		f. E-MAIL ADDRESS		g. FAX NO. (Include area code)	

FIGURE 49-13
REQUEST FOR MILITARY AERIAL SUPPORT - Continued

SECTION III - SPONSOR INFORMATION (Continued)		
10. IS EVENT OFFICIALLY SUPPORTED BY LOCAL GOVERNMENT(X one)	YES	NO
11. WILL YOU PROVIDE POST-EVENT REPORT ON REQUEST?(X one)	<input type="checkbox"/>	<input type="checkbox"/>
12. DOES SPONSORING ORGANIZATION PERMIT MEMBERSHIP WITHOUT REGARD TO RACE, RELIGION, SEX OR COLOR? (X one)	<input type="checkbox"/>	<input type="checkbox"/>
13. WILL ALL ASPECTS OF THIS EVENT BE AVAILABLE TO ALL PERSONS WITHOUT REGARD TO RACE, RELIGION, SEX OR COLOR? (X one)	<input type="checkbox"/>	<input type="checkbox"/>
14. WILL THE EVENT BE OPEN TO THE GENERAL PUBLIC? (X one)	<input type="checkbox"/>	<input type="checkbox"/>
SECTION IV - FEDERAL AVIATION ADMINISTRATION COORDINATION (Airspace Coordination)		
<p style="margin: 0;">F OR THIS EVENT TO BE CONSIDERED FOR U.S. MILITARY SUPPORT, THE SPONSOR MUST HAVE THIS SECTION COMPLETED BY THE FLIGHT STANDARDS DISTRICT OFFICE RESPONSIBLE FOR CONTROLLING THE AERIAL ACTIVITIES AT THE EVENT SITE.</p> <p style="margin: 0;">For events where the airspace falls under the purview of the United States Department of Transportation, Federal Aviation Administration (FAA) coordination is required for all U.S. military aviation activities described in Section I EXCEPT AIRCRAFT STATIC DISPLAYS. THE SPONSOR WILL FORWARD THIS DOCUMENT, WITH SECTIONS I THROUGH III AND SECTIONS V THROUGH VII COMPLETED, TO THE FLIGHT STANDARDS DISTRICT OFFICE (FSDO) HAVING JURISDICTION OVER THE SITE. After completion of Section IV by the FSDO, form will be returned to the sponsor for submission to DoD. Sponsors will allow a minimum of 45 days for FAA review and completion.</p>		
15. FLIGHT STANDARDS DISTRICT OFFICE REVIEW		
I have reviewed the requested activity in Section I and determined that: (X and complete as applicable)		
<input type="checkbox"/> a. FAA/OTHER GOVERNMENTAL WAIVER IS NOT REQUIRED.		
<input type="checkbox"/> b. WAIVER IS REQUIRED FOR THE FOLLOWING EVENT(S) LISTED IN SECTION I (Specify)		
<input type="checkbox"/> c. COORDINATION HAS BEEN ACCOMPLISHED WITH CONTROLLING AIR TRAFFIC CONTROL FACILITY.		
<input type="checkbox"/> d. AIR TRAFFIC COORDINATION IS NOT REQUIRED.		
<input type="checkbox"/> e. DEMONSTRATION SITE FEASIBILITY STUDY IS REQUIRED AND SITE PLAN WAS SUBMITTED BY THE SPONSOR. (Must meet show line, crowd line, airspace parameters and show congested areas, dwellings, thoroughfares, and obstructions within 3 N M of show center.)		
<input type="checkbox"/> f. DEMONSTRATION SITE FEASIBILITY STUDY IS NOT REQUIRED.		
<input type="checkbox"/> g. NO MAJOR NOISE CONCERNS IN THE REQUESTED AIRSPACE.		
16. FEASIBILITY DETERMINATION Based upon my review of this site, I find the site to be: (X one)		
<input type="checkbox"/> SATISFACTORY	<input type="checkbox"/> CONDITIONAL SATISFACTORY (See NOTE)	<input type="checkbox"/> UNSATISFACTORY (See NOTE)
<p style="margin: 0;">NOTE: If the show site is marked "Conditional Satisfactory", explain the conditions which must be met by the show sponsor to provide a "Satisfactory" site in the Additional Comments section. If the show site is marked "Unsatisfactory," the request for the applicable activity cannot be accepted by the Department of Defense.</p>		
17. ADDITIONAL COMMENTS (Mandatory if FARs are waived)		
18. COORDINATING OFFICIAL		
a. NAME (Last, First, Middle Initial)	b. FLIGHT STANDARDS DISTRICT OFFICE	c. TELEPHONE NO. (Include area code)
d. TITLE AND SIGNATURE		e. DATE SIGNED (YYYYMMDD)

FIGURE 49-13
REQUEST FOR MILITARY AERIAL SUPPORT - Continued

SECTION V - PROGRAM			
19. PROGRAM THEME AND OBJECTIVE (Please explain how aviation support is an integral part of the event.)			
20. CHARGES AND FEES			
a. ADMISSION	b. PARKING	c. SEATING	d. OTHER (Specify)
e. DOES EVENT RAISE FUNDS? (X one)	f. FUNDS WILL BE USED FOR (X as applicable)		g. SPECIFIC INSTRUCTIONS FOR USE OF FUNDS
<input type="checkbox"/> YES (Complete 20.f. and 20.g.)	<input type="checkbox"/> (1) CHARITIES	<input type="checkbox"/> (4) OTHER (Explain in 20.g.)	
<input type="checkbox"/> NO	<input type="checkbox"/> (2) EXPENSES	<input type="checkbox"/> (3) PRIZES	
21. HISTORICAL INFORMATION			
a. LIST ALL YEARS THE EVENT HAS BEEN HELD	b. LAST AERIAL DEMONSTRATION AND YEAR OF PERFORMANCE (i.e., Blue Angels, Thunderbirds, Golden Knights)	c. LIST CIVILIAN AND MILITARY AIRCRAFT AT LAST YEAR'S EVENT	
SECTION VI - SUPPORT (All Requests other than Flyovers)			
22. THE SPONSOR AGREES TO: (Initial each item signifying acceptance. Lack of initials renders the event ineligible for all support other than Flyovers.)			INITIALS
a. OBTAIN THE AIR SHOW WAIVER FROM THE FAA MONITOR PRIOR TO THE EVENT FOR EACH ACTIVITY REQUIRING A WAIVER (plan a 60-day lead time). FAILURE TO OBTAIN A WAIVER WILL RESULT IN DEMONSTRATION CANCELLATION AT THE EXPENSE OF THE SPONSOR.			
b. PAY TEAM COSTS AS OUTLINED ON PAGE 4, PARAGRAPHS 6 OR 8 OF INSTRUCTIONS, AS APPLICABLE. (Applies only for Blue Angels, Thunderbirds, or Golden Knights requests.)			
c. PROVIDE OR REIMBURSE TRANSPORTATION, MEALS, AND QUARTERS COSTS (including pre-event visits) FOR ARMED FORCES PARTICIPANTS, AS REQUIRED. (Reimbursement for demonstration teams covered in paragraphs 6 or 8 of Instructions.)			
d. PROVIDE SUITABLE AIRCRAFT FUEL AT MILITARY CONTRACT PRICES. (Sponsor must pay all costs over military contract prices, including any transportation and handling charges, if fuel is not available at such prices.)			
e. PROVIDE SECURITY FOR AIRCRAFT AT EVENT SITE DURING ENTIRE STAY. (Certain assets (i.e., B-2 and F-117) will require extensive security.)			
f. PROVIDE MOBILE FIREFIGHTING, CRASH, AND GROUND-TO-AIR COMMUNICATIONS EQUIPMENT AT THE SHOW SITE FOR FLIGHT AND PARACHUTE DEMONSTRATIONS AND STATIC DISPLAY AIRCRAFT.			
g. PROVIDE AMBULANCE AND MEDICAL PERSONNEL ON SITE DURING FLIGHT AND PARACHUTE DEMONSTRATIONS AND CERTAIN OTHER TYPES OF AERIAL ACTIVITIES AS DETERMINED, IN ADVANCE, BY THE MILITARY SERVICES.			
h. PROVIDE TELEPHONE FACILITIES FOR NECESSARY OFFICIAL COMMUNICATIONS AT THE EVENT SITE.			
i. PROVIDE AERIAL PHOTOGRAPH AND AIRFIELD DIAGRAM UPON REQUEST.			
SECTION VII - CERTIFICATION BY SPONSOR			
23. PRESIDENT/CHAIRMAN OF SPONSORING ORGANIZATION/BASE OR WING COMMANDER (If military sponsored)			
I certify that the information provided above is complete and accurate to the best of my knowledge. I understand that representatives from the military services will contact us to discuss arrangements and additional costs involved prior to final commitments. A tatives ny changes to the information on this form may invalidate eligibility for military participation.			
a. SIGNATURE	b. DATE SIGNED (YYYYMMDD)	c. PRINT NAME AND TITLE	

FIGURE 49-13

REQUEST FOR MILITARY AERIAL SUPPORT - Continued

INSTRUCTIONS

1. The attached form is used to request U.S. Armed Forces aircraft participation at public events (maximum of 3 days) in support of community relations programs, and for requesting an aerial demonstration team (U.S. Army Golden Knights, U.S. Navy Blue Angels, or U.S. Air Force Thunderbirds) to perform on or off a military installation, worldwide. This form is used by each Military Service to determine eligibility of an event for military aerial support. Once an event has been approved as eligible, it is the event sponsor's responsibility to coordinate possible military unit participation.
2. The event sponsor is responsible for gaining the completion of Section IV, FAA Coordination, prior to submission of the form to each appropriate Military Service. The local Flight Standards District Office that has jurisdiction over the event site will complete all appropriate blocks in Section IV. Requests for static displays only do not require FAA coordination. Complete Sections I - III and V - VII, and forward the form to the nearest Flight Standards District Office (FSDO) for completion of Section IV.
3. The local sponsoring organization is responsible for the accurate completion of the form and conducting the event. The information on this form must be typed or printed in ink, and is used to evaluate the event for compliance with public law and Department of Defense policies, and to determine its eligibility for Armed Forces participation. In all cases, military participation must not interfere with military operations and training programs, and must be at no additional cost to the U.S. Government. Sponsors will consult with local military recruiters and provide, at no charge, prime space at the event site for recruiting activities. Department of Defense is unable to support events for which sponsorship is intended to make a business profit. Events which have an admission charge, or other associated charges, do not necessarily preclude military participation. Military commands cannot participate in events which charge admission unless the military participation is incidental to the event, and not the primary attraction. Incomplete forms, or forms submitted late, cannot be considered and will be returned to the sponsor's representative.
4. Requests for flyovers will be considered only for aviation-oriented events (i.e., air shows, airport anniversaries or dedication events), or for patriotic observances (one day only) held in conjunction with Armed Forces Day, Memorial Day, Independence Day, POW/MIA Recognition Day, or Veterans Day (event must be within seven days of the actual holiday date to be considered). Flyovers may be performed by operational or training aircraft as determined by the Services. Sponsors of events other than bona fide air shows are prohibited from scheduling more than one Service to conduct the flyover. Once confirmation of participation is gained, other Services will not participate in the event. The Blue Angels and Thunderbirds do not perform flyovers. Requests for flyovers must be received for processing at least 90 days prior to the event for full consideration by the Services. Requests received closer than 30 days will not allow adequate planning for some organizations to support. Requests received 14 days or closer will not be considered. Complete Sections I - III and V - VII, and forward the form to the nearest Flight Standards District Office (FSDO) for completion of Section IV. The missing man formation will not be flown in support of any activities requested on this form. It is reserved for funeral services in honor of active duty rated/designated aviators or dignitaries of the Federal Government or as determined by the Military Services.
5. Requests for aircraft static displays will only be considered for air shows, airport events, expositions and fairs, and public events which contribute to the public knowledge of Armed Forces equipment and capabilities (including recruiting and ROTC events). Complete Sections I - III and V - VII (Section IV is not applicable when requesting static displays only). Requests may be sent from the sponsoring organization to each Service branch's public affairs office listed in paragraph 9 of these instructions. The sponsor must satisfy all safety and operational requirements for the requested aircraft. Requests received closer than 60 days (90 days for Marine Corps support) will not allow adequate planning for some organizations to support.
6. Civilian-sponsored requests for performances by a flight demonstration team (Blue Angels and Thunderbirds) will be considered only for events which are: (1) aviation oriented (i.e. air shows, airport events, (Continued) historical aviation events); (2) planning civilian aviation participation; (3) open to all Military Services for participation, and (4) held during the air show season (mid-March to mid-November). A partial reimbursement cost (quarters and meals) of \$6,000 per official demonstration (including any performance where admission is charged to view a team) is payable by all nonmilitary sponsors as indicated in the team support manual. Appearances on a military installation or sponsored by a military organization will only be approved in support of an official installation "open house" program (no admission charge/entrance fee). All event sponsors are required to comply with all aspects of the team support manual, as applicable. All requests for an aerial demonstration team must be received by August 1 of the year preceding the year of the event. Complete Sections I - III and V - VII, and forward the form to the nearest FAA Flight Standards District Office (FSDO) for completion of Section IV. The annual schedule will be released in December of the year prior to the season. Subsequent to public release of the schedules, teams will be rescheduled if a scheduled event is cancelled, the original sponsoring organization is changed, or the original event site is changed. Previously validated requests will automatically be reconsidered. NOTE: Blue Angels and Thunderbirds require 6,000 and 7,000 foot runways, respectively, at or within 30-50 nautical miles of the demonstration site. The Blue Angels also require arresting gear located within 80 nautical miles of the demonstration site.
7. Requests for single aircraft demonstrations (i.e., F-15, F-14, Harrier) will be considered for events as described in paragraph 6 (1) through (4) above. Army and Air Force single aircraft demonstrations must be received for processing at least 60 days prior to the event. USMC Harrier (AV-8B) and Navy demonstration requests must be received by January 31 each year. The Harrier demonstration can only be performed over a prepared hard surface or open water. (Scheduled Harrier events will receive two aircraft, one for demonstration and one for static display. Fifty gallons of distilled water must be provided for each Harrier demonstration.) Meals, lodging, and transportation for the aircrews must be provided by the sponsor.
8. Civilian-sponsored requests for the U.S. Army Parachute Team, the Golden Knights, will be considered for events such as air shows, airport dedications and anniversaries, expositions and fairs, events sponsored by the Army, and those events which contribute to the public knowledge of military and airborne operations, equipment and capabilities. All requests must be received by Army Public Affairs by October 1 of the year preceding the year of the event. Appearances on a military installation will only be approved in support of an official "open house" program. All sponsors, military and civilian, are required to reimburse the team for quarters, meals, ground transportation, and a designated rate for the jump platform (aircraft), as determined by the team, at least two weeks prior to the event (approximately \$2,500 per official show day). The annual schedule will be released in mid-January (approximately 45 days after the flight demonstration teams' schedules). After the official schedule is released, the Golden Knights will consider "add on" performances if received at least 60 days prior to the date of the event. In the event of cancellations, all requests previously validated will automatically be reconsidered, as required. Complete Sections I - III and V - VII, and forward the form to the nearest FAA Flight Standards District Office (FSDO) for completion of Section IV. Please send completed request forms to the appropriate Military Service public affairs office(s) listed below.
9. Additional DD Forms 2535 may be obtained through the office(s) listed below, through the nearest military installation public affairs office, or on the Internet at <http://web1.whs.osd.mil/icdhome/ddeforms.htm>.

ARMY
Office of the Chief of Public Affairs
United States Army
Attn: Community Relations Team
1500 Army Pentagon
Washington, DC 20310-1500
(703) 695-5732 (voice)
(703) 697-6159 (fax)
www.dtic.mil/armylink

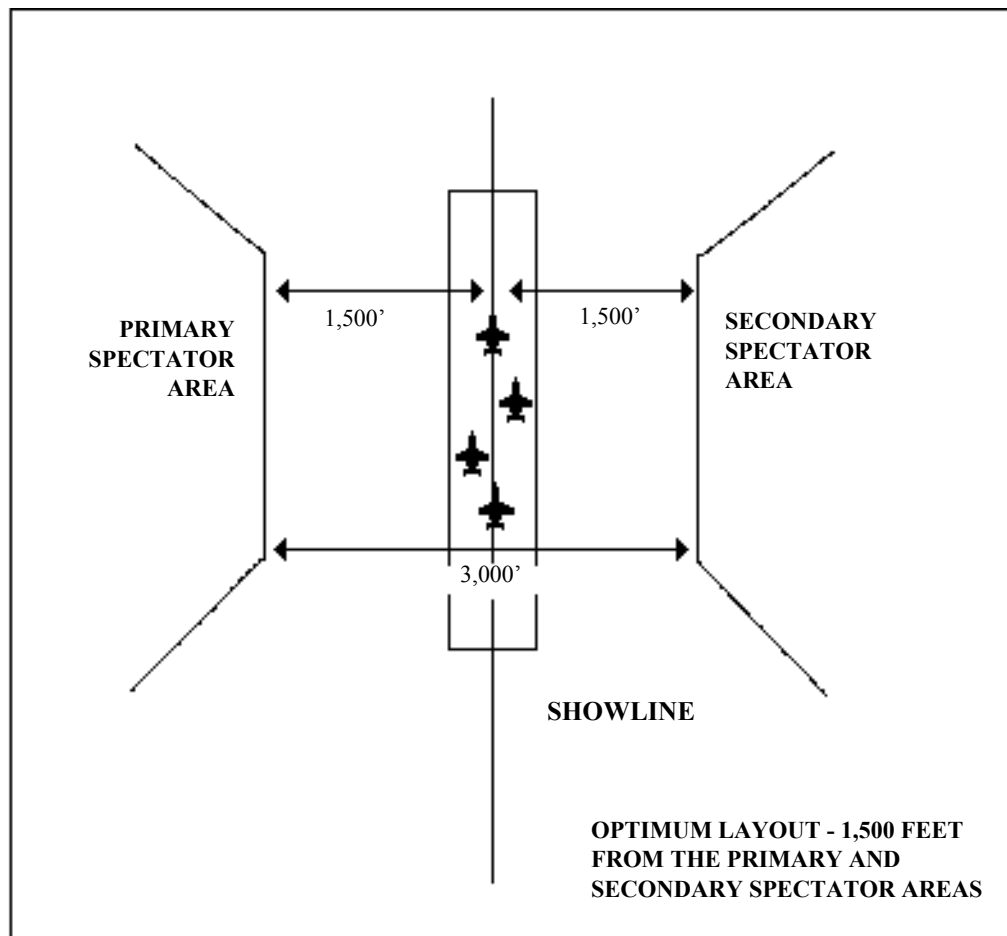
MARINE CORPS
CMC (PAC), HQ USMC
Attn: Aviation Coordinator
The Pentagon, Room 5E671
Washington, DC 20380-1775
(703) 614-1034 or -1054 (voice)
(703) 614-2358 (fax)
www.usmc.mil/2535

NAVY
Navy Office of Information
Attn: Aviation (OI-512)
1200 Navy Pentagon
Washington, DC 20350-1200
(202) 685-6666 (voice)
(202) 685-6671 (fax)
www.navy.mil

AIR FORCE
SAF/PAN
Attn: Aviation Support
1690 AF Pentagon
Washington, DC 20330-1690
(703) 693-2558 or 695-9776 (voice)
(703) 693-9601 (fax)
www.pa.hq.af.mil/airshows/

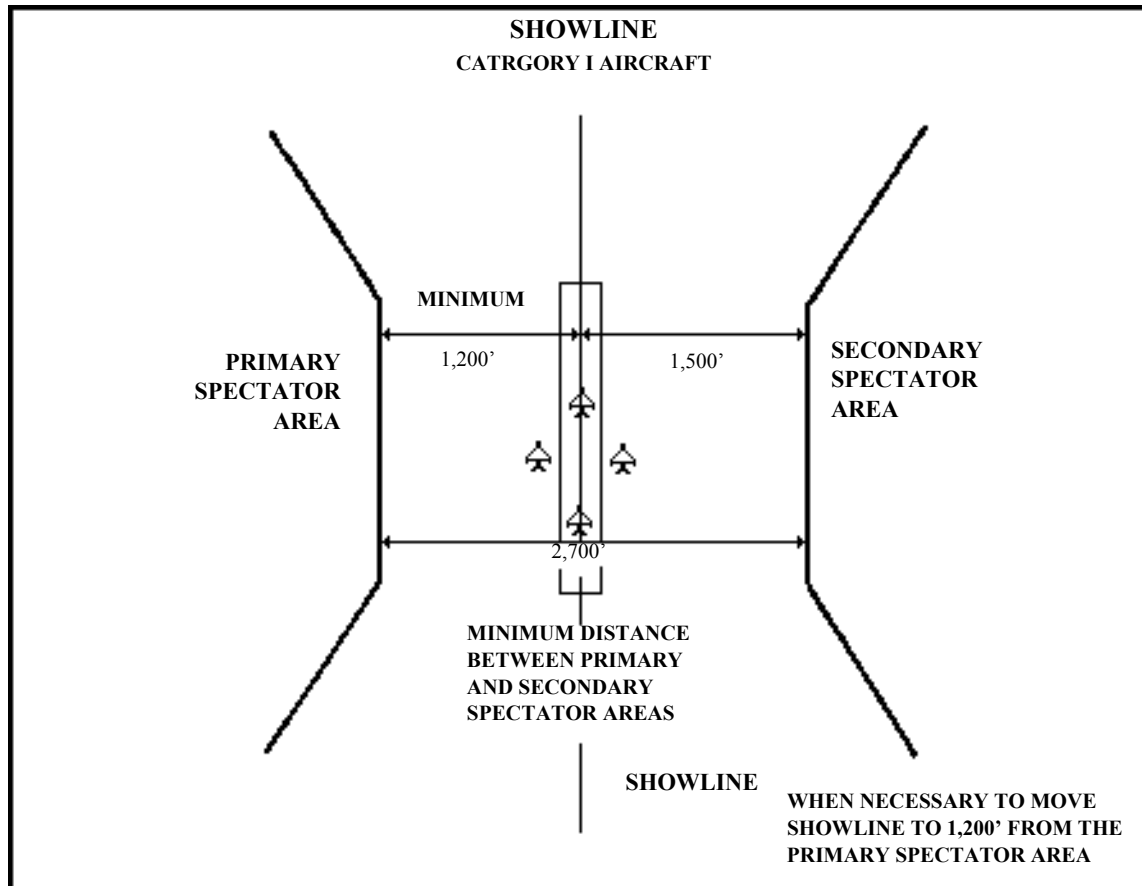
SPONSOR: PLEASE RETAIN A COPY OF THIS FORM FOR FUTURE REFERENCE.

FIGURE 49-14
SHOWLINE FOR CATEGORY I AIRCRAFT, OPTIMUM LAYOUT



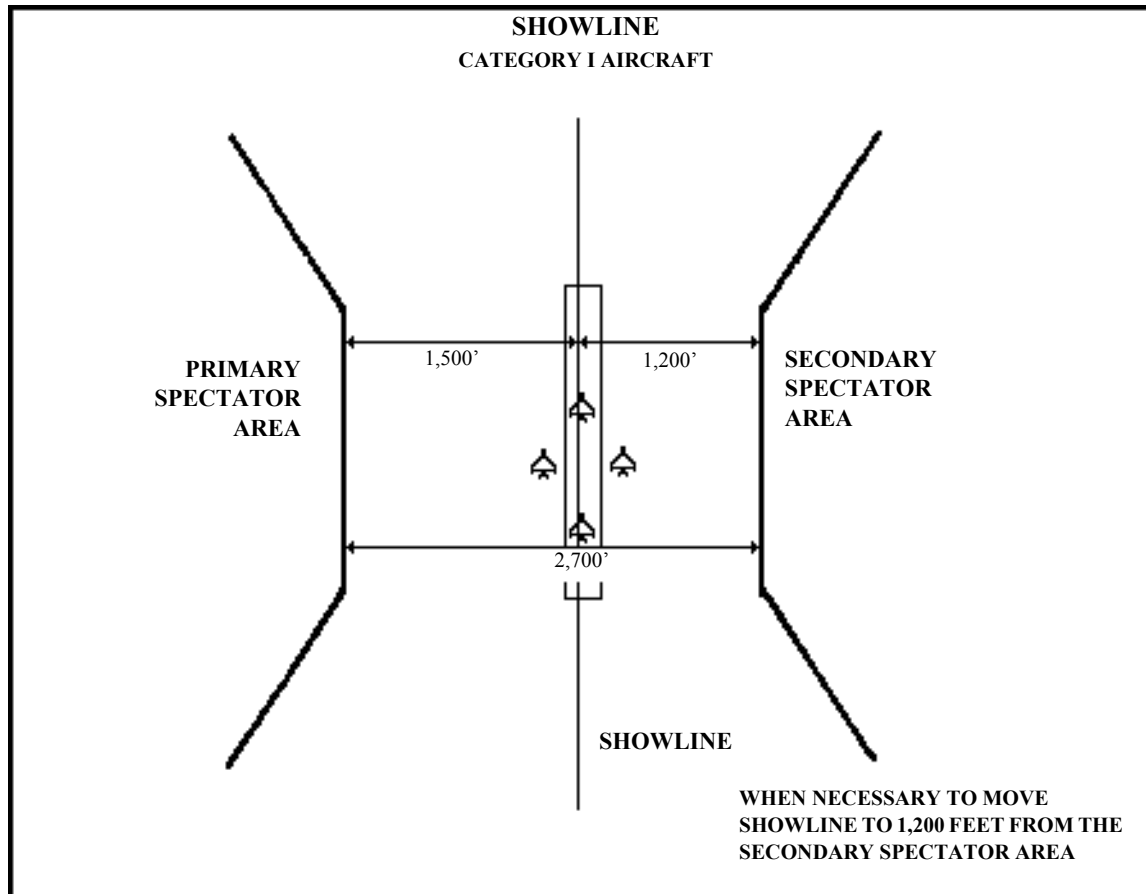
U.S. Military Teams have agreed to have the formation leader fly on the appropriate showline and the critical wingman within one wingspan of the leader in the above depicted formation.

**FIGURE 49-15
SHOWLINE FOR CATEGORY I AIRCRAFT,
SHOWLINE MOVED CLOSER TO PRIMARY SPECTATOR AREA**



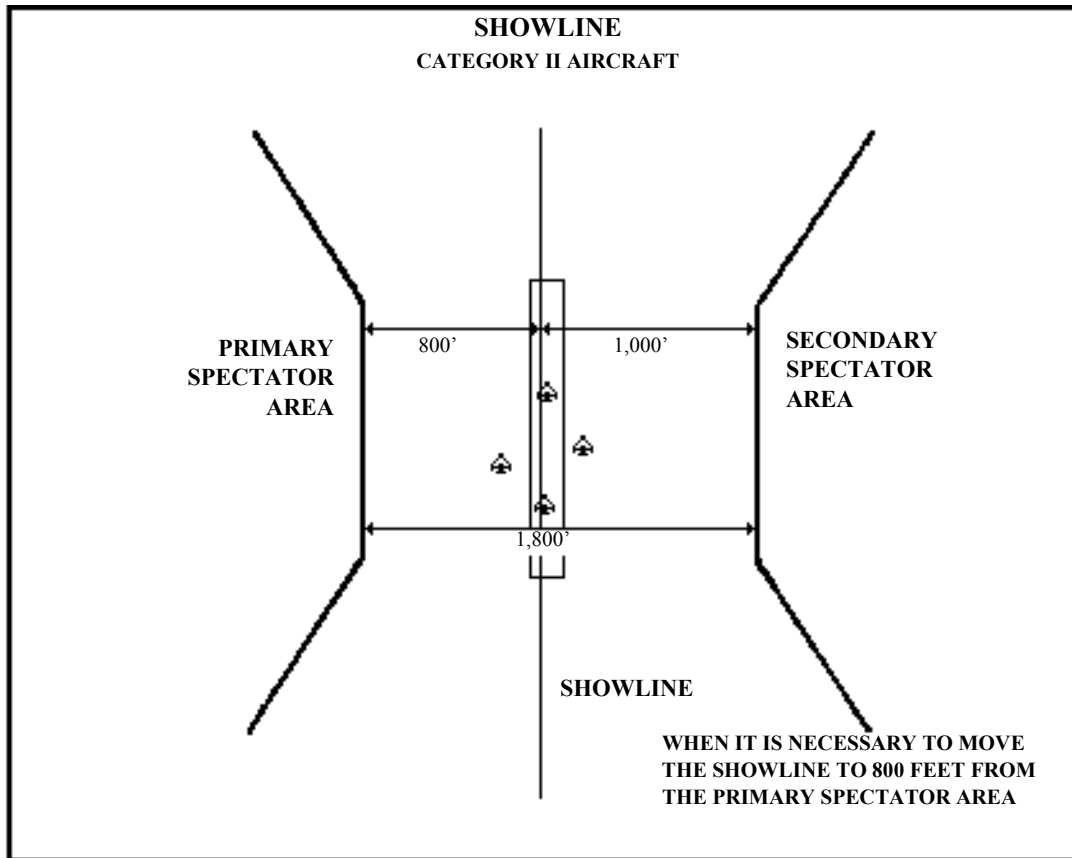
U.S. Military Teams have agreed to have the formation leader fly on the appropriate showline and the critical wingman within one wingspan of the leader in the above depicted formation.

FIGURE 49-16
SHOWLINE FOR CATEGORY I AIRCRAFT, SHOWLINE MOVED CLOSER TO
SECONDARY SPECTATOR AREA



U.S. Military Teams have agreed to have the formation leader fly on the appropriate showline and the critical wingman within one wingspan of the leader in the above depicted formation.

FIGURE 49-17
SHOWLINE FOR CATEGORY II AIRCRAFT, SHOWLINE MOVED CLOSER TO
PRIMARY SPECTATOR AREA



Critical wingman should be within one wingspan of leader in above depicted formation.

FIGURE 49-18
SHOWLINE FOR CATEGORY III AIRCRAFT, ONLY ACCEPTABLE
CONFIGURATION

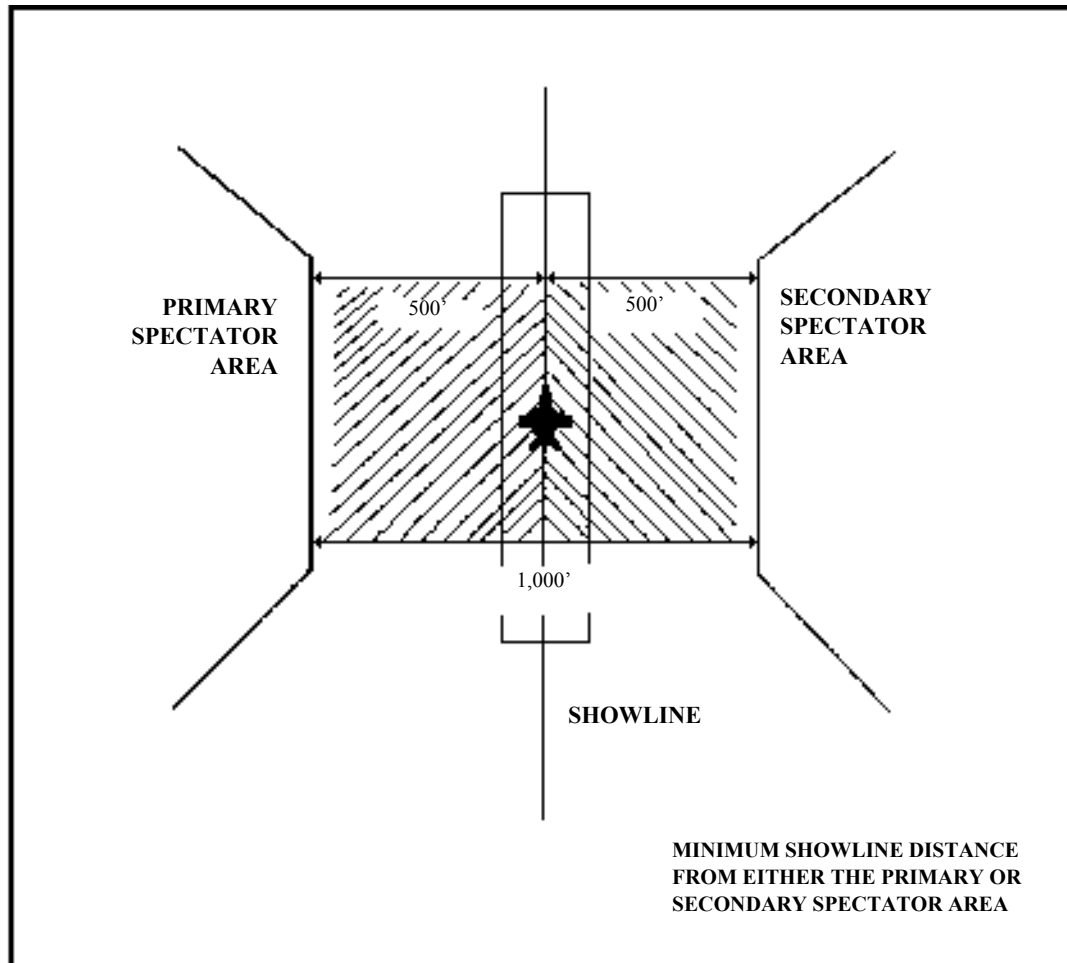
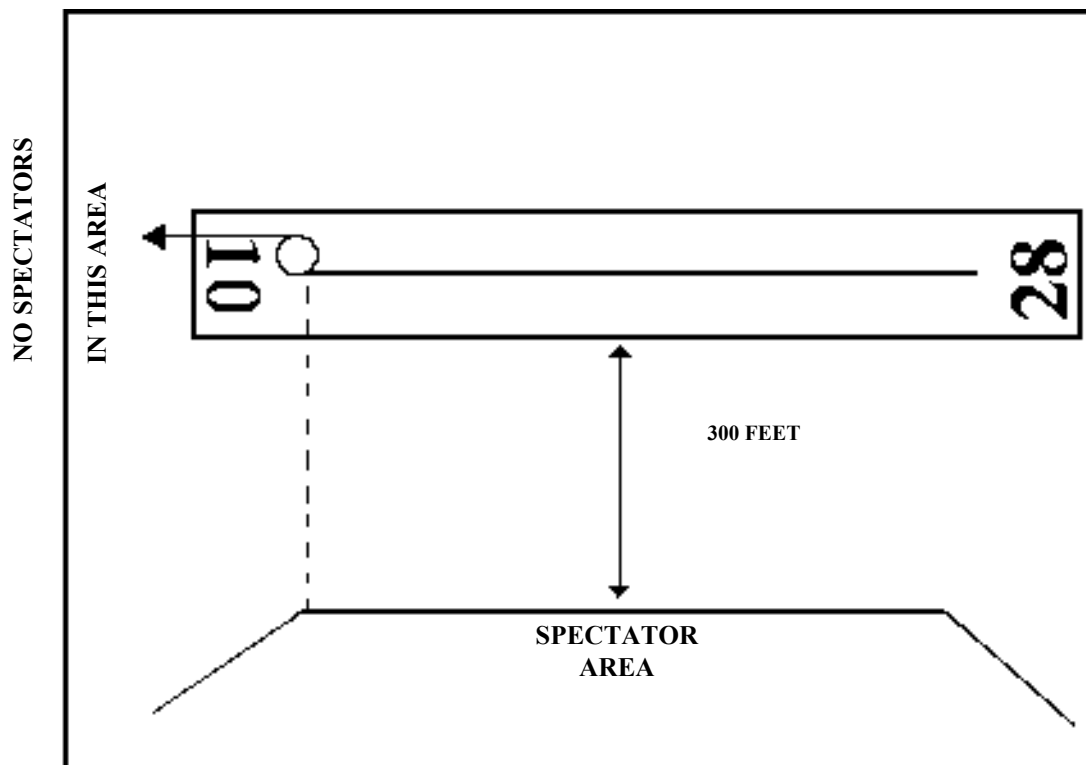


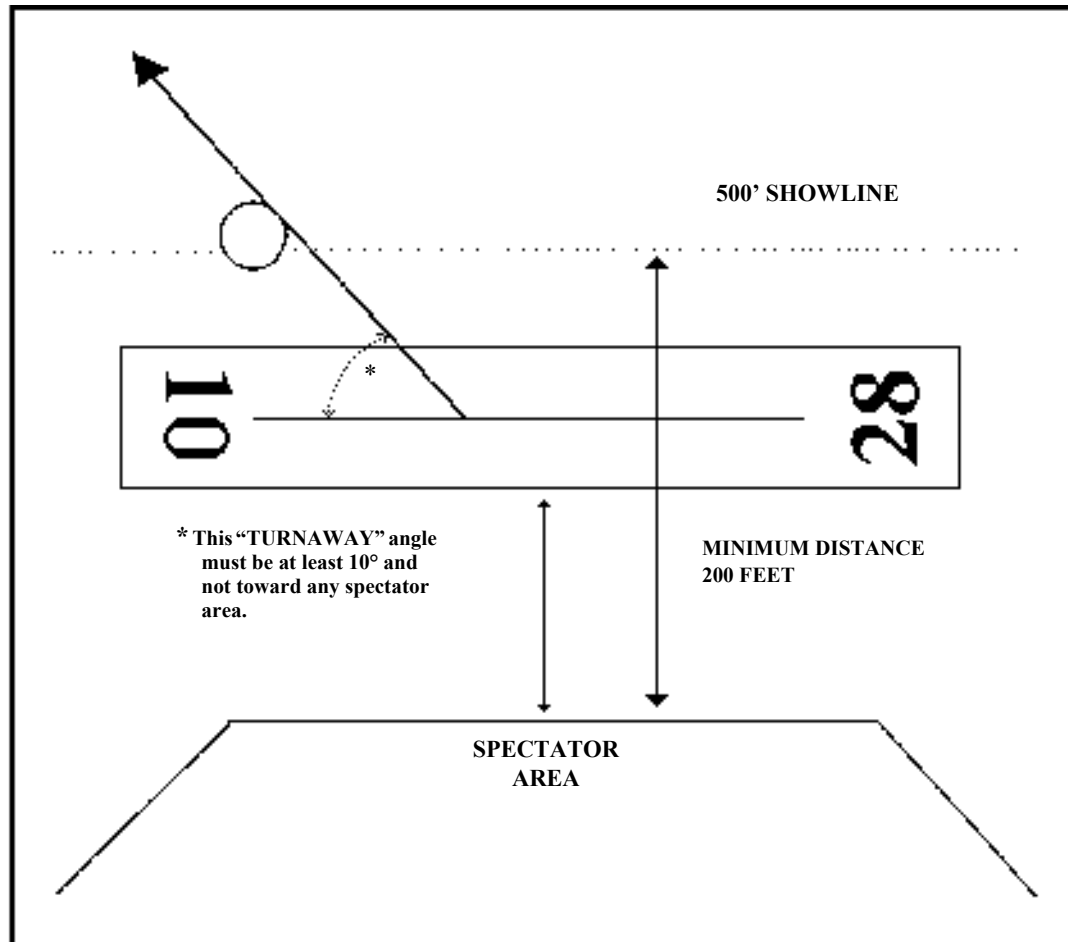
FIGURE 49-19
AEROBATICS PERFORMED AFTER TAKEOFF WHEN THE RUNWAY IS
LESS THAN 500 FEET FROM THE SPECTATOR AREA - BEYOND
THE END OF THE SPECTATOR AREA



NOTE: Aerobatic maneuvers performed after takeoff shall be toward the area away from spectator area.

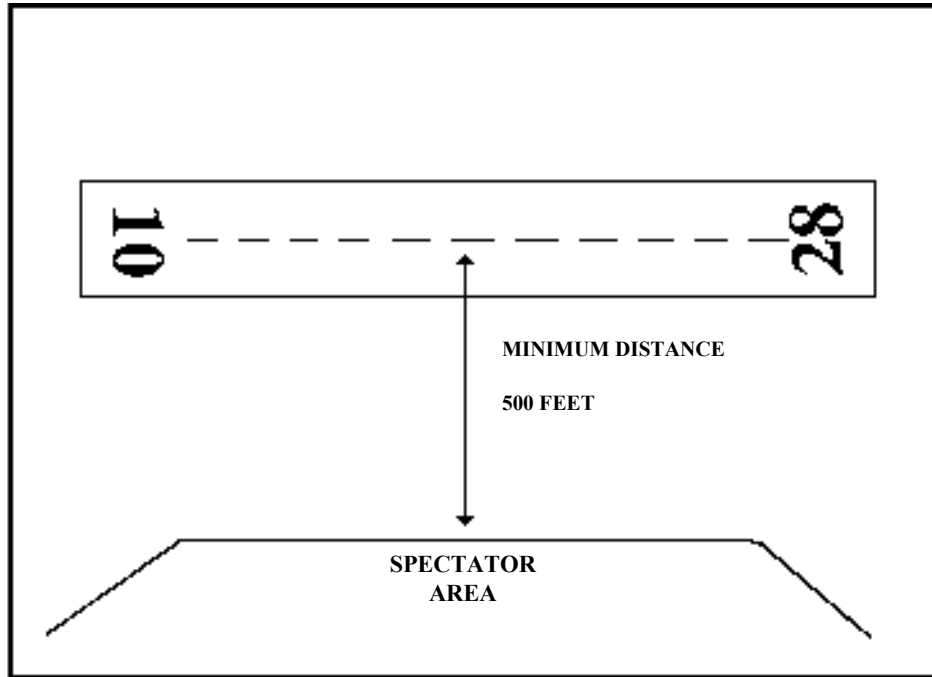
FIGURE 49-20
AEROBATICS PERFORMED AFTER TAKEOFF WHEN THE RUNWAY
IS LESS THAN 500 FEET FROM THE SPECTATOR AREA - TURN
AWAY FROM THE SPECTATOR AREA

NO SPECTATORS IN
THIS AREA



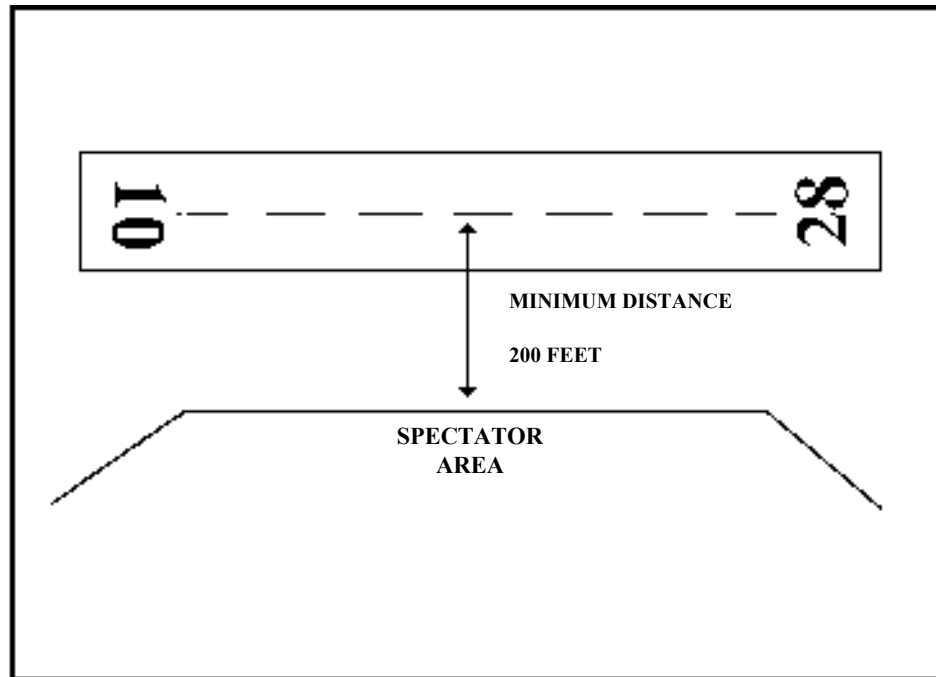
NOTE:An aerobatic Maneuver shall not be initiated prior to reaching a point at least 500 feet away from the spectator area and not in the "head-on area" of any other group of spectators.

**FIGURE 49-21
TAKEOFF AND LANDING AREA - APPROACH SPEED GREATER
THAN 100 KNOTS, GROSS WEIGHT GREATER THAN
50,000 LBS, AND FOR "FLYING FARMER" ACTS**



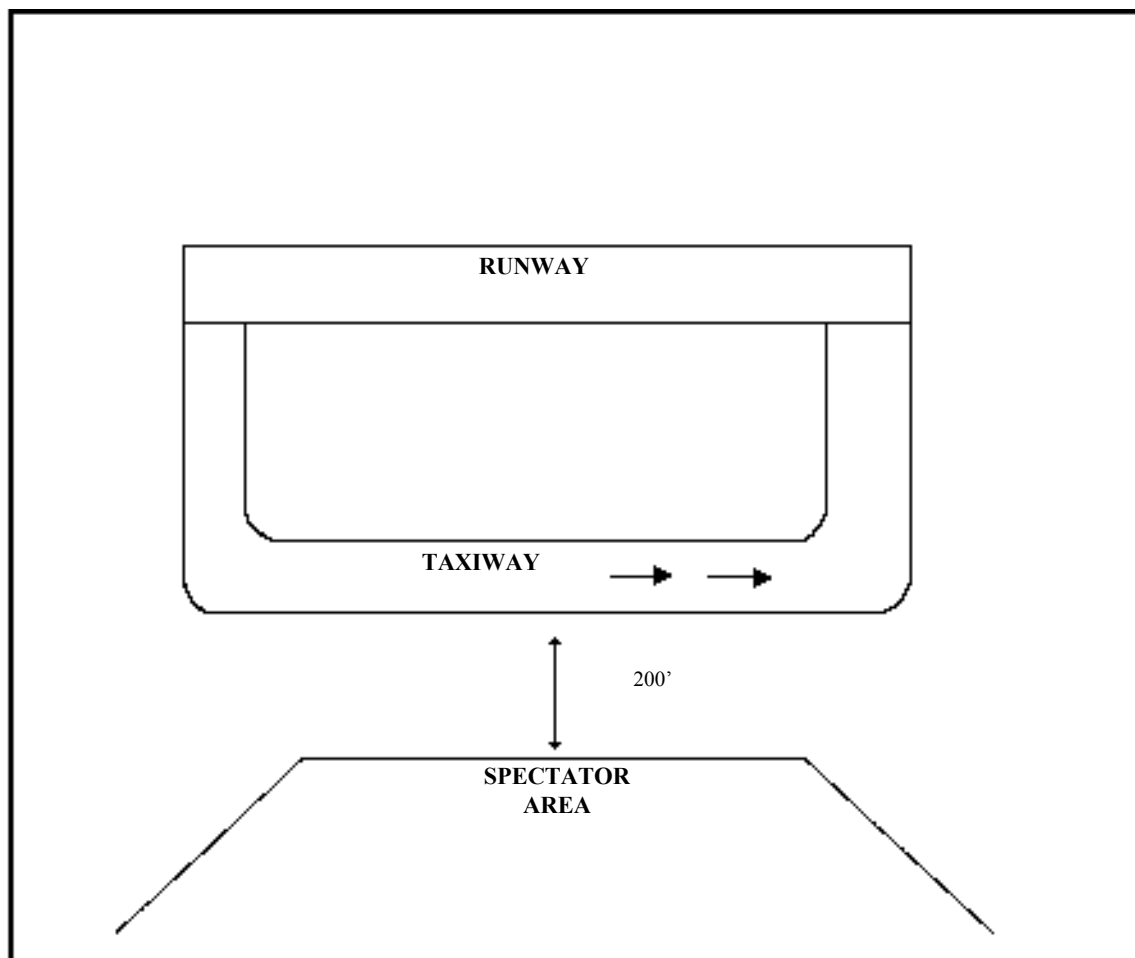
NOTE: This distance can be measured to the runway centerline for single aircraft operations conducted on the centerline. If measuring to the centerline, single aircraft must takeoff and land on the centerline. This distance shall be measured to the runway edge for other than in-trail formation operations.

FIGURE 49-22
TAKEOFF AND LANDING AREA - APPROACH SPEED LESS THAN 60 KNOTS
WITH NO EXCESSIVE MANEUVERING DURING TAKEOFF AND LANDING,
AND A CERTIFICATED GROSS WEIGHT OF 2,500 LBS. OR LESS



NOTE: This distance can be measured to the runway centerline for single aircraft operations conducted on the centerline. If measuring to the centerline, single aircraft must takeoff and land on the centerline. This distance shall be measured to the runway edge for other than in-trail formation operations.

FIGURE 49-23
SAILPLANE/AIRPLANE TAKEOFF AND SAILPLANE LANDING ON A
LANDING SITE PARALLEL TO SPECTATOR AREA



NOTE:A landing site may be an area not designated as taxiway, apron, or ramp; that is, a grass area may be used as a landing site.

FIGURE 49-24
SAILPLANE/AIRPLANE TAKEOFF PATH ON A DIVERGENT HEADING
OF 10 DEGREES OR MORE FROM SPECTATOR AREA

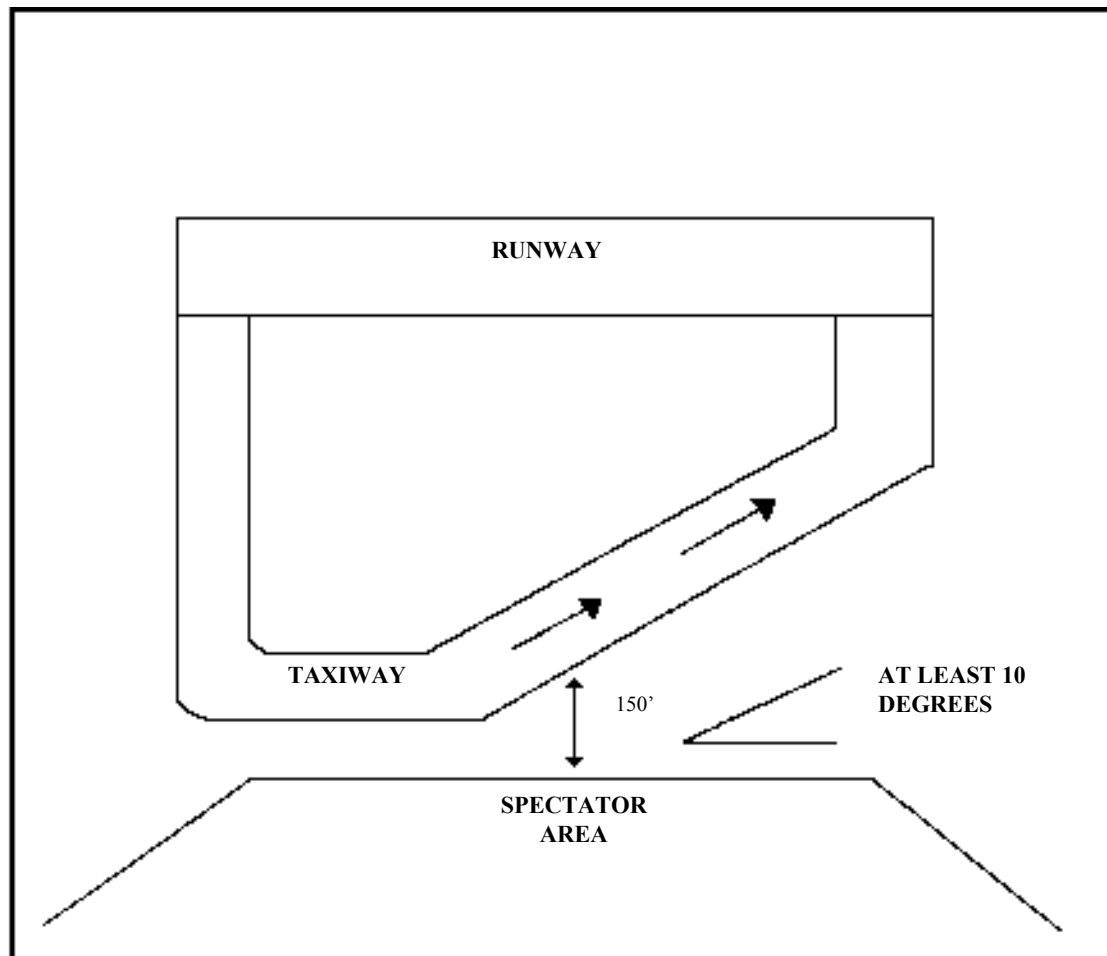


FIGURE 49-25
FAA FORM 7711-1, CERTIFICATE OF WAIVER OR AUTHORIZATION

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION CERTIFICATE OF WAIVER OR AUTHORIZATION	
ISSUED TO	HIGH ON KALAMAZOO, INC. JOHN M. ELLIS
ADDRESS	5605 PORTAGE ROAD KALAMAZOO, MICHIGAN 49002
This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the standard and special provisions contained in this certificate, and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.	
OPERATIONS AUTHORIZED AEROBATIC DEMONSTRATIONS AT THE KALAMAZOO COUNTY AIRPORT, KALAMAZOO, MICHIGAN, WITHIN A FIVE (5) NAUTICAL MILE RADIUS OF THE CENTER OF THE AIRPORT FROM THE SURFACE TO 15,000 MSL, EXCLUDING THE AIRSPACE ABOVE SPECTATORS OR CONGESTED AREAS. PARACHUTE JUMPING AT THE KALAMAZOO COUNTY AIRPORT, KALAMAZOO, MICHIGAN, WITHIN A TWO (2) NAUTICAL MILE RADIUS OF THE CENTER OF THE AIRPORT FROM THE SURFACE TO 15,000 FEET MSL, JUMPS OVER OR INTO CONGESTED AREAS OR OPEN AIR ASSEMBLY OF PERSONS ARE AUTHORIZED.	
LIST OF WAIVED REGULATIONS BY SECTION AND TITLE SEE ATTACHMENT A	
STANDARD PROVISIONS	
1. A copy of the application made for this certificate shall be attached to and become a part hereof. 2. This certificate shall be presented for inspection upon the request of any authorized representative of the Administrator of the Federal Aviation Administration, or of any State or municipal official charged with the duty of enforcing local laws or regulations. 3. The holder of this certificate shall be responsible for the strict observance of the terms and provisions contained herein. 4. This certificate is nontransferable.	
NOTE.—This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.	
SPECIAL PROVISIONS	
PARACHUTE SPECIAL PROVISIONS NOS. 1 THRU 13. "See Attached" <input checked="" type="checkbox"/> Special Provisions Nos. <u>1</u> to <u>26</u> inclusive, are set forth on the reverse side hereof.	
This certificate is effective from <u>1145EDT 06/09/96</u> to <u>1600EDT 06/09/96</u> , inclusive, and is subject to cancellation at any time upon notice by the Administrator or his authorized representative. <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p style="text-align: center;">Great Lakes _____ (Region)</p> <p style="text-align: center;">March 28, 1996 _____ (Date)</p> </div> <div style="width: 45%; text-align: center;"> <p>BY DIRECTION OF THE ADMINISTRATOR</p> <p><i>Wesley Crisler</i> _____ (Signature)</p> <p>Principal Operations Inspector _____ (Title)</p> </div> </div>	

FAA Form 7711-1 (7-74)

FIGURE 49-25
FAA FORM 7711-1, CERTIFICATE OF WAIVER OR AUTHORIZATION - Continued

ATTACHMENT A
LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

Section **91.107(a)(2)&(3)** - Seatbelts - stunt persons only.

Section **91.117(a)&(b)** - Aircraft Speed.

Section **91.119(b)** - Minimum safe altitude, as appropriate.

Section **91.119(c)** - Minimum safe altitude, as appropriate.

Section **91.127** - Operation on or in the vicinity of an airport.

Section **91.129** - Operations at airport with operating control towers.

Section **91.303** - Definition of Aerobatic Flight.

Section **91.303(c), (d) & (e)** - Aerobatic Flight.

Section **91.515(a)(1)** - Flight Altitude Rules.

NOTE: See detailed discussion in section 1, paragraphs 3E and 9F of this chapter.

LIST OF AUTHORIZED OPERATIONS BY SECTION AND TITLE

Section **105.15** - Jumps over or into congested areas or open air assembly of persons.

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